

# AVIATION WEEK

A MCGRAW-HILL PUBLICATION

MAR. 10, 1952

50 CENTS



## Seven tons of wallop *Air Mail Special!*

Air drops of heavy equipment like this field gun—shown leaving a Fairchild C-119 Packet—have gone a long way toward revolutionizing warfare.

But when you revolutionize war by transporting guns, tanks and trucks by air, you want to be mighty sure your airplane takes aboard *exactly the right amount of fuel* to fit in with proper flight planning.

Not more than you need—that would be useless weight. And definitely not less!

Helping to make sure ground crews do get exactly the right amount into the C-119's tanks are highly dependable Honeywell *electronic* fuel gauges. Because of Honeywell's high research, engineering and material standards, Honeywell electronic fuel gauges have the highest degree of accuracy.

This is only one of many Honeywell products now in use by the aviation industry. We expect the list to grow longer in future years. Because automatic controls are so important to aviation progress. And Honeywell has been the leader in controls for more than 60 years.

Aeronautical Division  
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MINNEAPOLIS  
**Honeywell**



*Aeronautical Controls*



## STANDARD EQUIPMENT

This B.F. Goodrich gas valve is  
typical example of the advanced engineering,  
research and manufacturing the  
aviation industry has gained from Hydro-Aire's  
wide experience. Today, this  
product, like other Hydro-Aire  
equipment—Hydro-Air-Skid Reeling  
Systems, Valves, Filters, Actuators,  
Hydraulic, Pneumatic and Electrical  
Accessories—has become standard equipment  
on America's testing airplanes.



**HYDRO-AIRE**  
A B.F. GOODRICH COMPANY  
DIVISION OF B.F. GOODRICH

# HYDRO-AIRE

HYDRO-AIR-REEL, HYDRO-AIR-VALVE, HYDRO-AIR-FILTER, HYDRO-AIR-ACTUATOR, HYDRO-AIR-ACCESSORY

## B.F. Goodrich



## How rubber helps a bomber stretch its range

**B-47 BOMBERS** are refueled in flight by the Flying Boom—a new telescoping pipe for in-flight refueling, developed by Boeing. Its no-deeped rubber-tipped guide is one of fueling equipment—special openings in the boom strip. To make the boom proceed, Boeing engineers faced three problems which they brought to B. F. Goodrich:

- 1. Its flexing in flight** might shake up the telescopic boom, or worse, for the boom to enter.
- 2. Its Goodrich engineers** suggested electric rubber—thin, tough rubber heated by a core of electric resistance wires. To fit snugly over bulges and unusual curves, BFG built the rubber in twelve welded sections. It flexed skin tight over the con-

- 3. Sudden shutting off** of fuel as the nose of the boom would deliver a shock which might damage the fuel pipe. Boeing had an idea for a "taper boom"—one rubber element inside another with an air chamber between, which would act like a shock absorber to cushion the jolt. BFG came up with a hose of man-made rubber on nylon fabric. It was light as weight, didn't suffer

from cold, had the strength needed to take the lack of the sagging fuel & prevented disengaging pins to the pipe.

These are typical of the aviation developments that have come from B. F. Goodrich, leader in rubber research and engineering. BFG produces for aviation include tires, wheels and brakes, heated rubbers, Desizers, Averses, adhesives such as Prensac Sealings, Zippens, fastcure, Plastadich adhesives, Kovens, accessories. The B. F. Goodrich Company, Aeronautical Division, Akron, O.

**B.F. Goodrich**  
FIRST IN RUBBER











**FOR THE TOUGHEST JOBS  
PICK THE HUSKIEST**

**TrimTrol**



Model R-220

The husker model TrimTrols—R-220 and R-174—are being used in increasing quantities where great strength and endurance are required. Despite only 316 pounds, they have an ultimate static load capacity of 7,400 pounds-inches and operate loads over 300 pounds-inches through 190° rotation. Zero backlash, negative brake, ad-

justable thrust switches, positive overtravel stops, adjustable position-indicating pointer, counter, and built-in radio noise filter are features of these TrimTrols.

Models R-220 and R-174 are identical in performance but differ in mounting arrangements.

The newer, lighter TrimTrols—R-433 and R-422—weigh 214 pounds and have an ultimate capacity of 1,200 pounds-inches.

**AIRBORNE**  
ACCESSORIES CORPORATION

1004 Channel Avenue, Middle & New Jersey

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**AVIATION CALENDAR**

- Mar. 16-17—Fuel-Airport Management and Operations School, Fuel-Air Center, Los Angeles, Ind.
- Mar. 14-16—National Electric Exposition, Convention Hall, Philadelphia.
- Mar. 14—National Flight Population Meeting, Institute of the Aeronautical Sciences, Cleveland.
- Mar. 17-18—National Maintenance Conference on Field Mechanics, to be held at Ohio State University.
- Mar. 17-21—American Society of Tool Engineers industrial, equipment and general meeting, "Theme: Looking for Science," Chicago (For information, write Denham & Co., 712 Rock Building, Detroit.)
- Mar. 20—Sessions of the Aeronautical Sciences Los Angeles section dinner meeting, speakers: Wilbur and Paul Ransom, Hughes Dry, Los Angeles.
- Mar. 20-21—Conference, Catalog of Airframe Electronic Equipment, to be held at Ohio State University in cooperation with USAF. Technical papers will be presented by AF, electronics and aircraft industries, and research organizations, Ohio State University, Columbus.
- Mar. 20-21—Aircraft Engineers Council annual conference, Hollywood Roosevelt Hotel, Hollywood, Calif.
- Mar. 24-26—American Society of Mechanical Engineers spring meeting, University of Washington, Seattle.
- Mar. 30-Apr. 1—Committee of American Association of Airport Executives 7th World.
- Mar. 31—Technical Sciences Council of N 7 national luncheon, guests on panel: meeting and quality control, Times House, Newark, N. J.
- Apr. 1-4—25th annual Greater New York Safety Convention & Exposition, Radio Station and New Yorker, New York.
- Apr. 16—Conference on safety problems of aviation, in cooperation with 7th annual Safety Conference of Greater New York Safety Council, Carl Albert E. Trail, USAF, will preside, Hotel Statler, New York.
- Apr. 17-24—National Aeronautics Meeting and Aeronautical Engineering Display, Society of Automotive Engineers, Hotel Statler, New York.
- Apr. 22—Sessions of the Aeronautical Sciences meeting, Cleveland-Alcoa section, Cleveland.
- Apr. 28—International Air Transport Association—Cooperation special committee meeting, Bermuda.
- Mar. 24-17th annual Wisconsin Aeronautics Conference, Green Bay.
- Mar. 22-24—National conference on airborne electronics, co-sponsored by Institute of Radio Engineers' Defense section and Professional Group on Airborne Electronic Systems, Dayton-Gilmore Plant, Dayton, Ohio.

**PICTURE CREDITS**

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AVIATION WEEK, March 18, 1952



**CONVIER DELTA PROGRESS**—The new Delta Convair XP-92A delta, depicted in flight, shows off its new delta-shaped after burner, which adds substantially to the thrust of its Allison J35-A-23 turbojet. Craft soon will be handed over to NACA for research.



**SCORPION'S AIR BRAKES OPEN**—Nothing a F-104 (above) demonstrates action of its slatted "airbrakes" which serve dual function as airbrakes and speed brakes. These considerable wing panels fold to give speed control when engaging target. Above: strap device without recording Mich. action.



**Plane News  
In Pictures**

**REFER CONNIE TAKEOFF TRIAL**—Looked [out] tonight's look ahead at a steep night immediately after taking off from Lockheed Air Terminal, Burbank. The prototype Super Connie is used by Lockheed in a flying laboratory to test new equipment.





Small and lightweight, G.E.'s new static-type voltage regulator is both fast and precise. Voltage regulation from an input to full load is better than  $\pm 2.5\%$ , while recovery in  $\pm 0.5\%$  of rated voltage even in less than 0.1 seconds after release from extreme conditions of load.

Strength and dependability are built completely into the regulator. Operation is unaffected by shock jolt, roll or yaw, or variations of 10 g. There are no tube elements, no brush components, almost infinite in wear-out. Operation is good to above 16,000 ft. and between  $-60^{\circ}\text{F}$  and  $+140^{\circ}\text{F}$ .

In G.E.'s new lines of alternators and voltage regulators the advantages of light weight, compactness and reliability of a-c electric systems are available for your aircraft installations. But whether your problem is a-c or d-c, a single instrument or complete electrical system, contact your General Electric aviation specialist, or write the General Electric Co., Salescenter 3, N. Y.

*You can put your confidence in—*

**GENERAL  ELECTRIC**

## New Static Regulator for Aircraft Alternators Has No Carbon Stacks

**Can withstand 10-G acceleration; Remains stable throughout life**

Designed to military specifications MIL-G-6099, this compact new static-type voltage regulator eliminates routine maintenance, reduces replacement costs, permits better aircraft electric system performance under extremes of altitude and temperature and eliminates other related problems. Both small and rugged, the regulator is designed to control G.E.'s new line of high-performance aircraft alternators.

**Notes significant features:**

- Expected useful life above 5000 hours
- No carbon stacks
- Ready to operate—no warm-up required
- Can be used with alternators either wye- or delta-connected
- Negligible voltage drift with temperature



## WHO'S WHERE

### In the Front Office

Lester Hesse, senior vice president of Pacific Aircraft Corp., Burbank, has been named executive vice president for Aircraft Engine & Parts Corp.'s N.Y. office. Hesse was director of maintenance for the Pacific Aircraft Division experience dates back to 1947. George R. Ellis has been designated vice president of Lee Inc., with emphasis on general management of the Lee-Cal Division, Los Angeles, which handles development, production and sales of autopilots for transport aircraft as well as aircraft radio and electronic navigation aids for general and commercial pilots. Don Fenchel has been appointed advertising director for Lee-Cal.

### Changes

Donald Hesse, director of engineering, Southwest Aircraft, has been named director of engineering and maintenance.

O. A. Rocco, formerly general traffic and sales manager for Precision Airlines, has been appointed assistant to the general manager of General Aviation, Inc. Rocco has been named assistant and public relations representative and Rita V. Capelton has been designated office manager at the company's New York office at N. Y. C.

Edward J. Doucet, Jr., has been named advertising manager of Victory Inc. by double expansion staff, Detroit. He previously was sales engineer in the Detroit office.

Donald F. Beckel has been appointed manager of the New York office of R. F. Connelly Co.'s Automotive Aviation and Commercial divisions, succeeding James A. Reed, who becomes special aviation sales representative in southern states.

Stanley D. Magnuson has joined R. M. Hallingford Corp. as special products manager for the Indian of Vietnam division. J. Robert Rowley, assistant manager of public relations for Triumph Aircraft division, has been named to his first Washington, D. C., office, at Carl Bentz & Associates, public relations firm.

H. W. Recker has succeeded C. C. Butner as assistant division manager, International of the General Electric Aircraft Division and is also the previous in the division manager of material. Rogers is having the company to become president and general manager at Harvard Industries, Inc., Glen Dale, Calif., aircraft and aircraft parts.

### What They're Doing

John T. Shawnee, vice president of Progress Van Aircraft-Crane Aircraft, has left the company after 27 years of service.

Reynold M. Mac has joined Del Mar Gas Power Laboratories, a new company to handle aviation development projects. Address: 2521 N. Shattuck Ave., Los Angeles 45. Del Mar was in chief engineer for the new firm was formerly special projects manager with Douglas Aircraft Co., Santa Monica.

## INDUSTRY OBSERVER

North American Aviation has delivered the last of its DeWitt Colt production of A-1 Skyraider attack bombers and has now placed completely the production of this plane in its Columbus, Ohio plant.

Mooney Aircraft Inc., Wichita, is developing a new line plane, landplane and personal plane, as a running mate to the first Mooney open-planer M-10. The all-metal low-wing four-place, with tricycle gear, is powered with a 145-hp engine, and is credited with a top speed of around 160 mph.

Lockheed Aircraft Corp.'s new special projects center at Burbank, will have the construction of the new Air Force XC-130 technology crop transport plane, in its first segment. Except for a few fabric-covered parts and electrical and structural details, said the XC-130 will be done at the special projects center, but not specifically for construction of prototype aircraft.

Thirty six of 90 Douglas Page Mustangs, originally designed for British European Airways at Indianapolis, are to be modified for Royal Air Force use in Britain. Remaining four go to British West African Airways. Plans are too large for BSA's proposed route through Scottish islands where DH Rapide airplanes are still adequate for the traffic.

Second French firm to build American aircraft under license is Société Nationale des Constructions Aéronautiques du Nord, which will produce the Bell Model 47. Earlier agreement made SNCAN du Sud Est increases for the Sikorsky S-51 (Aviation Week Feb. 31, 1957).

SNECMA, the authorized French aircraft engine builder, is currently making to build the British Bristol Hercules piston engine under license. The French-built versions will be used to power the SNCAN Nord 2200 twin-engine turboprop, of which 175 are on order for the French air force.

Roca Aeronautical Co. has been assigned as Air Force North American P-51 fighter and a New Lockheed F-104 fighter, for flight test work on applications of subsonic intake expansion, while projects growing out of the early Ryan Firebird guided missile.

Construction of the new Navarino plant for assembly of Winthrop House P-10 jet engine at Riverside, Calif., near the new Lincoln-Mercury assembly plant at Wayne, Mich., was due to start this month, with construction work. The 500,000 sq ft plant will include 18 engine test cells and will be operated by Ford's Lincoln-Mercury division in conjunction with the Winthrop plant where 140 parts will be built.

The first Martin built B-57 Canberra intruder bomber is expected to fly into the summer 1957.

Army members begin are looking forward to the use of photo reconnaissance guided missiles for close-range reconnaissance in addition to artillery spotting and reconnaissance work now being done by airplanes.

McDonnell Aircraft Corp. is flying an XF-88A Voodoo for the first time since August, 1950. Mac built two of the planes for USAF. Both were sent to Edwards AFB, Calif., and one was badly damaged in a landing accident. Later, one was turned back to St. Louis and had not been at the ground test test pilot Bill Hughes flew it Feb. 5.

Judging by the material already in flightplane manufacturers in the C-5 program (Aviation Week Mar. 4, p. 16) Convair Aircraft has two new models planned, including the previously mentioned two-engine plane. The alternative chart shows a Model 100 and Model 101 as Convair model 223 by engine having a Hirth prop. The Model 100, according to the C-5 program, is scheduled to start in production in December of this year with five planes. The one will build up to 40 for the year in 1959. The Convair two motor likely is the Model 101, scheduled to go into production, according to the alternative, in September, 1959.



## Washington Roundup

### Naval Air's Offensive

Naval Air, which sustained a slight defensive while the Air Force continued to dominate in the dog fight sector over the two years following the failed B-56 mission, is now taking a confident offensive for greater recognition.

Navy's 1993 offensive was to dominate the Air Force, specifically conventional bombing and the B-56. Navy's offensive now is going to be based on the words of Naval Air: It is the difference between negative and positive approach.

- Developments have paved the way for Naval Air.
- Korean War put forth the prospect that the U. S. whose military plans were then concentrated on a straight U. S. vs. Russia conflict might have to meet the Russian threat at points around the globe.
- Atomic bombs have been developed for carrier planes.
- Foreign governments have aligned the U. S. to "back" out had they moved toward the globe—a reason to which strategic air can make no contribution.
- Russian advances in air defense and interceptors already have minimized the possibility of successful bombing strikes through its layers.

Following prominently in Naval Air's path will be representative Assistant Secretary for Air John Folsom. His military adviser will be the top-flight technician, Capt John S. "Jimmy" Thack, just back from Korea.

The latter is best known for the "Black Widow"—a fighter tactic that first proved met in Naval maneuvers shortly after Pearl Harbor, was later adopted by USAF. In command of the Black-Widow center to suit his own old duty from the West Coast after the outbreak in Korea—he directed "Black Widow" close air support for troops during the final assault on Pusan to the day of final locked-point negotiating.

This is Naval Technician Thack's outlook.

### ATOMIC ATTACK ON U. S.

Lithuania at it'll be launched from submarines—into international waters.

An F-105 report that specifies an air-to-air mission defense system 100% of enemy bombers could cut through to wipe out U. S. cities with A-bombs had stirred vast concern in Congress.

Thack's Congress: "It could not be done without unacceptable losses on the enemy. Thack's dilemma is it will become by most people that we must have our close down air, our other type of plane except a better intercepter. It is a way of nature to purchase into options if they are not able to shoot down any other type of plane."

### MAJOR THREAT: SUBS

It's Naval Air's low level mission to meet the main threat to military systems: look out submersible attack, submarine attack, heart down submersible attack, submersible attack, submersible attack, submersible attack, submersible attack.

• Location of submersible is well known—they're all at the water's edge—and a major target of carrier planes.

• Joint List of Defense—As in Korea, in any war "troops will need troops right from the start—until the U. S. becomes completely unbalanced and a completely unbalanced U. S. will not have the strategic materials to sustain

effective military arms. We could not hold elections, accounts, or ships."

### MEASURE OF COMBAT SUCCESS

Is any failure ever in as past war, the measure of combat success—the key to long-term plan and fighting morale—is how much real attack we hold?

• In this, close air support will be extremely important. We must have control of the air at the right times and places to accomplish the kind of bombing ground."

• Army concerns that some USAF strategy is a jet-powered aircraft a fast launch out air power will be the former factor in any future war.

• Tactical Support: Jets or Prop Planes—They are enough numbers. It isn't a question of jet replacing slower prop planes.

• Propeller planes can't meet jets in combat. But after jets have gained air control over an enemy area, propeller aircraft, with greater range and load capacity, are more effective in delivering devastation.

• USAF looks to the jet eventually to replace piston-driven planes for close support.

### CARRIER: WHAT FUTURE?

• The fact carrier task force hasn't yet been explained to its fullest ability.

• But in the Pacific it proved it could win over superior numbers of enemy land-based air power—because we know where they were, but they never knew where we were, and we met the threat of guided missiles. And that proved needed, the Soviet Koreans, had various pilots. The sub carrier doesn't spell out the end of the carrier. No fixed base carrier has been used, it was stopped by a sub. Submersible jet fighter, but so well known.

• "Attack" Submersible—Navy should push development of high performance "attack" submarine possible jets.

• They have due great advantage. A submarine launching hold all the potential over the other plane.

• And Navy is keeping a close eye on development of the most powerful planes for possible submarine operations.

### BALANCING FORCES

Navyman Thack agrees with Air Chief Gen. Elton Sorenson's theme that U. S. forces should be "balanced" to meet the Russian threat, exploiting U. S. advantage against Russian weakness. But how the two parts compare.

Washington says more land-based air power to overcome Russia's overwhelming superiority in ground troops. But Thack insists:

• "Close-to-the-front line, more troops than we have and that have been out-producing us in land-based air power in some ways."

• "Where are they weak? Is sea power. It certainly needs good ways to exploit our strength against their weakness. In getting an overwhelming sea-air attack, carrier and amphibious forces to sufficient strength we can make amphibious landings wherever and whenever we choose."

• And the Father—Air Force looks to the satellite for the land-based strike-power plane capable of cutting down devastation.

—Katherine Johnson

# AVIATION WEEK

VOL. 36, NO. 19

MARCH 18, 1952

## USAF Reveals Role in New NATO Plan

- Top official says U. S. will pay more than half cost of the aircraft called for under Lisbon program.
- Most of money will go for tactical planes, less than one-fourth for light bombers, less for transports.
- And backing up NATO air power will be 143-wing USAF which official calls 'whole of a power.'

By Ben S. Lee

U. S. funds will pay for over half the cost of Western Europe's new half-century program to equip NATO air power production centers in peacetime. A top Defense Department official told Aviation Week last week.

Outlining the broad details of the North Atlantic Treaty Organization's new program for military needs, he said that over half of the total funds is allocated for tactical fighters, less than one-fourth for light bombers and the remainder to troop transports.

The NATO meeting at Lisbon, Portugal, last month agreed to spend \$300 billion and to spread the cost of equipping Western Europe against the threat of communism to the 16 member nations in proportion to their economic capabilities.

Of the total figure to be provided by the 1600 billion, 20 percent of troops and 4000 planes will, with each of the 1600 billion, be the end of combat by 1952. Exact breakdown of funds by nation to provide those men and planes is at present classified top secret.

At the Air Force's 136th anniversary celebration (U. S. troop equipment to NATO). He said the plan had been agreed upon by the U. S. Joint Chiefs of Staff as "adequate."

While Defense Department would like a much larger U. S. Air Force, but it is unrealistic to expect NATO, "to make things more like here in a military point of view," he said, "and we planned military strength some nations are past decisions by all these services."

"Continue to operate in some quiet way," the source said "the generally favored 95 wing structure is a practical basis for developing the U. S. and the subsequent 143-wing Air Force is a whole of a power."

• Only Tactical Air—Air had been previously planned—but not officially agreed to by member nations of the North Atlantic Treaty group with the recent Lisbon meeting. Western European nations will concentrate solely upon tactical support.

It is, of course, only under as NATO agreement is concluded. Each of the member nations will provide such other as defense craft and aircraft as they find valuable without budget permit, but in providing the unified defense program for mutual protection, member nations agreed to end upon the existence and coexistence of such nations in full proportion to their capabilities. With reference to its terms, this means that the United States Air Force and Navy will be providing from England and France combat parts, equipment, supplies and services not only for other nations but for their own NATO members.

For example, the English Electric Canberra (U. S. B-24) forced by its manufacturer to U. S. at the Glenn L. Martin Co., will be delivered not only to U. S. but to other wings but was also delivered to combat units of NATO members for night interdiction work.

• NATO to Get B-46: The Douglas B-46 (New A-10), now in flight test and soon to go into full production (see page 16) at World War II Chicago-Cadillac Park, Ill., plant, will fill the U. S. tactical light bomber requirement for a day bomber as well as the NATO group's requirement.

The Republic F-84 Thunderbolt—in alphabetical order T, G, F—has been standardized upon by the NATO group for tactical fighter-bomber activities in connection with close ground support operations. The series G, equipped for night bombing, is now being tested for tactical strike bomb technique at Langley AFB. Results of new equipment tested as weapons now in service test will be incorporated into the F-84F and probable in all subsequent F-84 variants.

The North American F-86, originally designed for tactical operations, is now being redesigned to incorporate an intercepter as a result of its Korean experience against the Russian MIG. Although it is at present standardized upon by NATO as the best fighter of its type, it is likely to become so by default since there is nothing else in production which outshines it.

The F-86 in production in two main types, one in Canada and one in the U. S. for production in Australia. At present, U. S. and Canadian versions are equipped with the GE J47, while the Canadian version will be equipped with the Rolls-Royce Avon. It is likely that the new Canadian F-86 will be equipped with the GE J47, but existing production at North American's Canadian plant, also will be delivered to Canada units of the British and French forces late in 1953.

• No NATO B-46: The U. S. Strategic Air Command, equipped with

## This Is NATO Structure

• The North Atlantic Treaty Organization grew out of Western Union Treaty signed at Brussels last year and work by U. K., France, Belgium, Netherlands and Luxembourg (last three are the "Benelux" nations). . . NATO itself in three years old and membership was signed in Washington April 4, 1949. . . Present members: U. S., Canada, U. K., France, Belgium, Norway, Denmark, Italy, Portugal, Iceland, Greece, Turkey. . . .

• NATO's main purpose is to ensure the peace and security of its members. . . . NATO's main purpose is to ensure the peace and security of its members. . . . NATO's main purpose is to ensure the peace and security of its members. . . .

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R-28s, R-55s, R-56s and soon the Boeing 2-47, R-51 and in the Convair 440, is the only way of U.S. defense which will not find its counterpart in the NATO network. There are no present plans to develop either the R-16 or the R-47, or the yet to come R-52 and R-53, to any other NATO nation.

This does not mean, however, that some of these craft will not be based on Allied soil. To the contrary, most U.S. bases spring across England, France, and NATO Africa to the Middle East, including R-347 and possibly "bigheers" and "antifacs."

Previous reports that the British Victor Valiant a target bomber, would be located in the midwest in the United States for comparison to medium bomber role, was refuted by the Defense Department source. He also stated that there were no plans to set up an English plant for R-47 production in report which had been widely circulated in the United States.

Performing intercepts aircraft to be assigned to air defense missions within the United States will not play a part in the NATO program for mutual defense. While a number of U.S. wings are now being jet fighters on air defense missions within U.S. borders, it remains for production of the Convair NF-102 and other plans to follow. It is also possible that no defense interceptors will be U.S.

These planes would be very different from the present-day aircraft designed solely to intercept enemy bombers attacking the U.S. or NATO.

Details of NF-102 Role—The NF-102



MARTIN'S NEW PRESIDENT

George M. Budas, 44, joined as financial controller of Martin Co., has been named as president and general manager of the Baltimore company. Budas was with J. B. Wharton as vice president. Budas and Wharton previously held similar posts with Transcontinental, a Pullman Co. subsidiary. C. C. Finkler, former Martin president, and Richard Johnson, former vice president, are still with the company to assist the new president in getting started.

which was not ordered into prototype production by the U.S. Navy, is a delta wing configuration. It is possible that the U.S. Navy will be interested in the Convair delivery.

NF-102. The new design will be equipped with a full automatic electronic pilot, in accordance with Hughes Aircraft, and will carry a limited pilot only in emergency. Weapon equipment will be a guided missile. Speed of the interceptors is unspecified.

The Defense spokesman, after discussing the role of U.S. Air Force in NATO planning, commented further on overall U.S. postwar planning in relation to the recently announced shut-out of aircraft production. The news, which can be considered very much an official statement on the subject, are as follows:

"While exploration of planning for a complex, integrated of a date such as 1955, 1958, 1964, 1966, etc., does not mean automatically that we expect an attack by an aggressor at one of those times but mean instead that our future contemplation to be able to sustain a given time would be able to sustain that of an aggressor to such capabilities for waging a war are being carefully assessed."

The so-called shut-out in Air Force and Navy aircraft deliveries has been indicated by several factors. From one of these is, of course, no more. This shut-out was not arrived at voluntarily, but has been based upon good sound advice, for the most part from the manufacturing community. It is doubtful if a single single manufacturer within the industry could be found to dispute the necessity of the shut-out.

As indicated the shut-out results in a higher cost not just plane, yet the shut-out accomplishes a level of cost of production as a large program without the present over-production and delays. The industry has planned for this planned production for nearly two years. Now they have it.

If an emergency should develop anywhere along the shut-out in production and delivery time, there is no doubt in the military mind that the industry and the aircraft design source managements will be able to step up production to meet the need.

## Mid-West Buys DC-3s

Mid-West Airlines has bought 10 medium Air Lines DC-3s and hopes to start taking delivery of them this spring. Basic price is reportedly somewhere between \$150,000 and \$145,000 each, a previous price one that is to be charged by the firm for each useful hour of flight time for each plane before being replaced.

Get in the Scoop—Tune Yarns in for Defense

## Vandenberg Stays In, LeMay Is Vice Chief

An Army Chief of Staff Staff Vandenberg whose appointment to that post was scheduled to expire Apr. 30, has been reappointed by President Truman for a third term.

The new appointment will be of short duration and is scheduled to conclude shortly after Vandenberg completes his 18th term from June 17, 1953. Announcement of his appointment was made after a special meeting of the Joint Chiefs and the entire Secretaries with Defense Secretary Robert Lovett.

The White House simultaneously announced appointment of Gen. Curtis LeMay to replace Gen. Nathan F. Twiss as Vice Chief of Staff. Twiss takes LeMay's post in Commanding General, Strategic Air Command.

Recalls of his, Vice Chief of Staff post in LeMay's manner to such an appointment that he eventually is slated to replace Vandenberg as Chief of Staff. Apparent reason being the fact that LeMay is a role which will enable the Air Force and Administration to test his ability as a diplomat and air-branch strategist.

Previously he had been in some degree with the State Department because of his liaison.

The decision, late as it was in coming but part in due to considerable confusion within the military establishment where certain projects have been held up because of possible change in top command.

## 30th Air Division To New Quarters

A new, multi-million dollar installation near Willow Run, Mich., will house headquarters 30th Air Division, within a month. The new quarters of the AF's 30th Air Division is being built and no other state is moving from Schriber Field, Mich. "We'll be in during the winter, but we're doing it before," said Gen. Ed. E. Tuckey, commanding officer, "only under less crowded conditions."

The job to guard Michigan, Ohio, Indiana, Kentucky, Illinois, Missouri and West Virginia against an attack by fighters in those states and under direct command of the division.

The installation also commands a vast base of local industrial plants. The new installation complex facilities for training electronically the approach of any aircraft. It is completely self-sufficient, possessing its own power plant and employing an elaborate fire alarm control system in its own base of land and water, including auxiliary facilities, barracks and train.



Gen. Joseph T. McNamara

## Heads Convair

- Gen. McNamara is named to succeed Cohn.
- Former president given new company post.

Consolidated Vultee Aircraft Corp. last week stepped into the pool of retired Air Force general officers and elected the highest ranking senior of them all, Gen. Joseph T. McNamara, to head the aircraft company, succeeding Gen. H. H. Cohn as president.

Holder of such important postwar military jobs as chairman of the Defense Department's potential Missile and Guided Missile and commanding general of an Air Force Command. Gen. McNamara was a top military leader in World War II. In 1945 he was Deputy Chief of Staff of Army, and in 1944 Deputy Supreme Allied Commander in the Mediterranean Theater and commanding general of U.S. forces in that area. In 1945 he was Deputy Chief of Staff, Army, and in 1944 Deputy Supreme Allied Commander, commanding Gen. Dwight D. Eisenhower.

According to Floyd B. Olson, Convair head chairman, Olson simultaneously elected chief chairman of the board of directors. Both officers will assume their new posts Apr. 1.

Olson said that Convair was fortunate in obtaining the services of a man who had 17 years military experience. "Particularly as an advisor, tactician and executive," Gen. McNamara will become chief executive officer of one of the nation's most diversified aircraft companies. At the present time Convair has 1,000 employees in all home office of land and water-based auxiliary facilities, barracks and train.

post-war main activities in the general mobile and other fields.

McNamara was elected by the USAF Jan. 18. He was born in 1897 and graduated from West Point in June, 1915. In April, 1917, he was given rank of "junior military advisor" for the Special Corps Aviation School at Fort Monmouth.

In 1935 he was named director of the 2nd Corps Artillery School and in 1937 that same year he was named commander of the 1st Army Signal School in the Third sector. In 1938 he became commander of the Air Corps Tactical School at Langley, AFB, and after a brief tour was named a member of the War Department General Staff for Military Intelligence in the Air Section.

In 1939 he became the commander of the primary ground school at March AFB, Calif., and later the 7th Army headquarters in 1943 to 1945. He was an instructor at the Army War College and from that time until 1942 he served in various top Air Corps posts in the United States.

## 874 Million Asked in NACA Budget

National Aeronautics Committee in Washington, is asking Congress for an increased 1953 fiscal year budget of \$74 million to step up its program from the \$62 million allocated for the current fiscal year which ends next June 30.

Of NACA's 1953 budget request, \$54.5 million is committed for interest and expenses, providing for its increase in the present from \$48.2 million to \$54.5 million.

The remaining \$19.7 million is for construction.

Langley Laboratory, \$5.9 million for research in the 27th percent toward its research, testing, and \$4.4 million for a high-temperature test, basic research laboratory to investigate the problem of loss of structural strength due to air friction on structural parts under very high-speed flight conditions.

Levy Laboratory, \$1.6 million to increase the capacity of the high-pressure supply and distribution system and \$4.0 million for expansion of its facilities for liquid jet engine research.

## Air Taxi Plans

National Air Taxi Conference plans a drive to increase coverage of the U.S. from its present concentration largely in the East according to a program presented by the conference annual meeting to be presided by Robert S. Northrup.



NAVY TAKES MASS DELIVERY OF HUP-2s

Midwest Pacific HUP-2s put loaded on to U.S. Navy, at Philadelphia International Airport, pending an ongoing report as they have on the field. The two main airplane loaded aircraft will handle other

other about seven, including some units. The HUP-2s deliver a spare aircraft, a device exhibited in over the pilot's job and under command flight conditions.



## Douglas to Build RB-66 at Chicago

The Memphis Board has accepted Air Force Plant No. 5 at Orchard Park, Ill., located on O'Hare International Airport near Chicago, to be Douglas Aircraft Company Air Market Company manufacturing plant for the RB-66, the first of a new aircraft being assembled there is the Lockheed Lancer and Airplane Corp. for C-119 production. Douglas will use the plant to manufacture the RB-66 twin jet light bomber.

The RB-66 is modified version of the Navy A-1H sweeping target light bomber. It will be the largest and fastest current bomber in the Air Force fleet. While similar to the A-1H, it is a modification of the new A-1H, a single-engine aircraft. It is to be built in a single piece in one of the new A-1H which has a 50% wing area and 50% length.

NASA AID will be provided by two Westinghouse J49 turbojet engines in each under the wing. Air Force RB-66 will be powered by General Electric J47 turbojets. Both the Westinghouse and General Electric turbojets have a maximum thrust of about 9,000 lb. with afterburner.

While details of the work in plant equipment are still dropped in column news paper work in Wright AFB, the staff is going ahead with the removal of its personal property and Douglas

is selectively setting up plans to return to the top, industrial wooden plant at Chicago in World War II. The RB-66 is scheduled to assemble the last major USAF combat type to get engines. The RB-66, built in a very high regard by the Air Force as a very light bomber and by the Navy as a A-1H bomber, also is scheduled for NATO wings in Europe.

Although Navy is somewhat reluctant to discuss its production plans for its latest bomber, plans to set up own production plant in Chicago for Air Force and Navy versions of the new two-engine bomber are indicative of the way government and industry are attempting standardization for the national economy.

## Air Lobbyists List Receptions, Expenses

Representatives of interest to aviation under the Congressional Lobbying Act, with reported expenditures for lobbying activities during 1951 and reported expenses (salary, dues, association) for the fourth quarter of the year included:

Aircraft Industries Assn., 1951 expenditure \$54,615.  
Air Transport Assn., 1951 expenditure \$22,032. Fourth quarter receipts \$11,589.  
Assn. of American Railroads, 1951 expenditure \$23,509. Fourth quarter receipts \$49,796.

Transportation Assn. of America, 1951 expenditure \$19,164. Fourth quarter receipts \$53,790.  
S. T. Higgins, Air Transport Assn., 1951 expenditure \$113. Fourth quarter receipts \$7,101.

J. Carter Fort, Assn. of American Railroads, 1951 expenditure \$508. Fourth quarter receipts \$6,241.  
General Electric Co., 1951 expenditure (all in the fourth quarter) \$7,373.  
Harold Moser, Glenn L. Martin Co., 1951 expenditure \$2,507. Fourth quarter receipts \$10,800.  
Wm. W. Winkler, Aeronautical Training Society, fourth quarter receipts \$13,508.

Larry Carter, Air Line Pilots Assn., fourth quarter receipts \$1,716.  
Vernon Johnson, Lockheed Aircraft Corp., salary \$14,840 a year.

Langdon F. Moore, advocate of the Kennedy Aerial Safety Separation Bill, 1951 expenditure \$915.  
Clarence E. Egan, Transportation Assn. of America, 1951 expenditure \$632. Fourth quarter receipts \$1,097.  
These organizations reported no expenditures or receipts.

Blair, Randall, Aircraft Industries Assn., John C. Case, First American World Airways, Arthur McNeil, IBM and Knott, DeWitt C. Ramsey, Aircraft Industries Assn., Spence, Hatch, Bill, Ryder, and Dwyer, representing Aircraft Industries Assn. on air policy.

## Correction

I refer for sale and backlog for the helicopter industry in 1950 and 1951 under the title "Inventory of Air Force" Aviation Week, Feb. 25. For convenience of readers we are pointing below the complete table as it should have appeared, and in the same way, so that our readers to drawing may clip the corrected table and place it over the one appearing on page 97, Feb. 25, 1952 issue.

Helicopter Industry			
	1950	1951	
Ship:	\$10,000,000	\$20,000,000	
Building:	\$10,000,000	\$20,000,000	
Equipment:	\$10,000,000	\$20,000,000	
Parts (not in %)	\$10,000,000	\$20,000,000	
Inventory (not in %)	\$10,000,000	\$20,000,000	
In stock (not in %)	\$10,000,000	\$20,000,000	

including some other estimates.  
\*Based on information from the Aviation Week, Feb. 25, 1952 issue.

Get in the Scrap-Town Team in for Defense

## Union Shops

- That's the hot issue in new air labor demands.
- Wage hikes a certainty for producers, airlines.

Both the aircraft production and airline industries are in a period of increasing pressure for higher wages and the union shop.

Higher wages are a certainty. The Wage Stabilization Board policies permit wages to rise with the cost of living and, when wage disputes come before WSB, it is recommended as much as, if not more than, the provable cost of living.

An increase of about 25 cents an hour has been recommended by WSB for 10,000 employees of Douglas Aircraft Co.

A WSB panel has urged an increase of 144 cents an hour for 11,500 employees at Wright Aeronautical plants at Wood-Ridge, N. J.

The Railroad and Airline Wage Board is following WSB policies, more or less, in acting on various applications for approval of wage rises.

► **The Issue:**—The union shop is still a subject of hot controversy. In aircraft, union shop agreements have been signed voluntarily by Glenn L. Martin and Fairchild with the CIO United Automobile Workers and by Republic Aviation with the AFL International Association of Machinists. But it is being fought stubbornly by Boeing Aircraft Co., Douglas and Pratt & Whitney.

On the airlines, except for a union shop is given by the President's Emergency Board's recommendations on its list it is a dispute involving most of the nation's airlines and 170 non-union pilots speaking for about a million employees. A union policy in this government-owned recommendation for a union shop was the fact that it is now prohibited under a law of the Railway Labor Act and a number of railroad unions have signed similar shop agreements.

The evidence is piled up on the airlines where the airlines have signed union shop plans—American Airlines and the American Airlines with the CIO Transport Workers and Eastern Air Lines and Northwest Airlines with the International Association of Machinists.

► **Deliver Action:**—A union shop contract requires all employees to join the union within 30 days—60 days on new hires—and keep their dues paid up, in case they quit. Under this plan, if they quit they can't get their job if they are



GE's Aircraft Gas Turbine Laboratory at Lockheed, Ohio, will cost \$70 million.

## GE Plans Jet Research Center

The General Electric Co.'s new jet engine division at Lockheed, Ohio, is to be dedicated May 18 and 19, to be a study of the completion of America's first jet engine.

The new facility—estimated to cost about \$30 million—will be geared to research and development work on jet engine gas turbines.

GE's Lockheed plant was built during World War II for the production of power engines by Wright Aeronautical Corp. About three years ago, GE received a large portion of the plant for the assembly of J47 turbojets. The program was almost completely abandoned in 1948 and the plant was closed throughout the country who rejected the J47 assembly line.

Then about one year ago, expansion was planned to make the plant a jet engine development and production center. Additional space was leased and the original plant was purchased. Additional office and factory space was constructed.

expelled from the union for an action except non-payment of dues and initiation fee.

In the Douglas dispute, WSB made recommendations on 14 of 16 issues in dispute. It delayed taking a position on the UAW-CIO's demands for a union shop and for making the wage increase retroactive to October 1950, instead of Sept. 5, 1951, expiration date of the agreement, as recommended by a WSB panel.

The 16,000 UAW-CIO members at the Douglas Long Beach plant have not had a wage increase since 1949. In Detroit, 1951, the company offered a 10 percent wage increase which was accepted at UAW-organized plants but was

The new jet will include last joined buildings—lab space, development, assembly, assembly and mechanical building and construction cost building. Now these buildings will be a complete facility for the supply with an adjacent cooling tower and power distribution center.

A Decade of Jet Program Director in Cincinnati May 18 will be followed next day by a dedication and opening of the Lockheed facilities, with an industry and defense production officials participating in the dedication. A jet program director, May 18, has been who participated in building the first U.S. jet engine, conclude the industry celebration.

Among speakers scheduled: William C. Patrick, Assistant Secretary of Defense; Douglas MacArthur, Chief of Defense; USAF Chief of Staff Gen. Hoyt S. Vandenberg; GE President Ralph J. Cordiner; and C. W. LePrieux, general manager of GE's Aircraft Gas Turbine Division.

subsequently reported by UAW-CIO.

The dispute involves employees at Long Beach as well as about 300 employees at the United Aircraft Workers of America (UAW) at Long Beach, El Segundo and Santa Monica plants.

► **Auto Wage Payoffs:**—With more automobile industry wage patterns are toppling on auto. In the Douglas case, for instance, WSB recommended a 10 percent increase, up to five cents below the national rate and appeared a out of living credits. In the Wright Aeronautical dispute, the panel has recommended a four-cent hourly increase for higher productivity, even though neither the company nor the union-UAW-CIO-pled for it.



AMERICAN HELICOPTER'S AERIAL JEEP

first phase of the XH-16 shows the widest single unit, pulsed powered, helicopter designed for the U.S. Army by American Helicopter Co., Inc. (AHC). Designed for an amphibious, the new XH-16 can be

assembled in 15 to 18 hours, stored in the ground, and assembled by two men in 20 minutes. Its rotor tip mounted, primary propellers give the new design a top speed of 48 mph. Single-engine seems to be stressed.



14



# Korea: Field Test for Tactical Air Power

- Air support of ground action is a decisive factor in modern warfare. That is broad general lesson of Korea.
- But Korea also has pointed up some basic requirements for development of aircraft for a bigger tactical war.

By A. W. Jessop

(McGraw-Hill World News)

Talpo-Air Power is the payoff power for the U.S. in tactical warfare. It will be the decisive factor in battle against other modern mechanized armies or superior numerical forces such as the Chinese Communist "hordes."

This is the broad general lesson of Korea.

Time and again, as power saved U.S. forces from defeat or provided the winning punch in battle.

• **Rescue**, then stopping the original North Korean onslaught. It enabled newly outnumbered U.S. forces to establish and hold the Pusan Perimeter. It softened the Reds for the successful counter-offensive, the peninsula break-out and Incheon landing.

• **Holding** Chinese divisions at bay for the front, slowly withdrawing the 1st Marine Division from the Chosin Reservoir. It covered the retreat of UN forces into North Korea and paved the UN drive back across the Yalu River toward the present border line, a slaughter of Chinese by thousands during two Red counter-offensives last spring.

• **Intensifying** Communist supply efforts, apparently with success. Since last summer, the Reds, although thwarted during major offensive action, have launched nothing less than regimental attacks.

• **Providing** a major source of intelligence for the UN. Reconnaissance aircraft maintain continual contact patrol all across the front and deep into enemy territory, producing visual observations reports and photographic coverage for ground units. Infantry command elements complain bitterly that day Air Force reconnaissance fails to provide full coverage of their sector.

• **Saving** thousands of UN lives. Helicopters not only pick up wounded down behind the lines, but evacuate seriously wounded who probably would die if transported by other means from front line and stations to surgical hospitals. Corps aircraft extend the evacuation from the war zone to station and general hospitals in Japan and on to hospitals in the U.S.

• **Moving** a large volume of critical emergency supplies and troops to the front. Ammunition, food, fuel and medicines are standard air transportable, especially in winter. But air transport lifted and dropped in delivered weapons, tanks, construction material, construction equipment, GCA units, radio installations and practically every single item required for modern war. To a large extent this was an extension of the Berlin airlift technique to combat operations, blending the airlift with World War II Japan bottle supply technique.

The only problem has been keeping a check on use of airlift. Some features on the ground continually use airlift even when more conventional means transport is available.

(Some day, military historians may conclude that proper logistic planning could have placed the Eighth Army on the banks of the Yalu River before the Chinese Communists could in appreciable numbers. As for the Eighth Army drive north up the west half of Korea, the North Cape under separate command was pulled out by ship for an amphibious landing at the east coast port of Wonsan. The logistical plan called for almost all the ocean shipping to support the Cape landing and for all rapid airlift for Eighth Army's push.)

But Wonsan harbor turned out to be the most heavily mined in history, and Yench Cape was unable to land for almost two days. Eighth Army had to show its airlift with Republic of Korea and other UN units which rushed Wonsan by land, expecting to be re-supplied by Cape, while ocean shipping waited off Wonsan while the Navy swept the harbor. This curtailed Eighth Army's supplies, and led to belated air-landed assistance.

• **Other** Uses-Air Power serves a wide range of other tasks as well. Light aviation in World War II was used almost exclusively for utility fire direction, target marked observation and a wide range of courier work. Now, cargo and division commanders use light aircraft-Cessna L-19s, Navion L-10s and Bell H-130 helicopters-just about the way they used props in World War II.

• **A** division commander, for example, visits his regiments and front line battalions continually by helicopter in a

few hours, a journey which took a couple of grueling days in a jeep.

• **Stiff** and supply officials of all commands down to division, use all sorts of light aircraft and claim that these personal trips produce more efficient operations.

• **Signal** and engineer officers conduct a wide portion of their reconnaissance by light plane-looking for breaks in communication lines, searching for weak points, signals, listening ground beds and routes for new roads, etc. They have lost communication lines from L-10s and helicopters.

Air Power's new heavy helicopters offer greater mobility to ground forces and perhaps eventually may design Marine assault forces from amphibious to airborne. Limited tests by JMAR 164, a Marine squadron equipped with Sikorsky HRS-1s, and the 1st Marine division have proved the practicability of helicopter transport of infantry, supplies and equipment in the battle zone.

• **Flamethrower**-Primary punch of air power, both strategic and tactical is the use of flamethrower-cannon, rocket-propelled, missile and loathe-to-destroy. In its grand climax interpretation, strategic air power produces peace by threatening to destroy an aggressor's population and economic center. In war, strategic air power destroys an enemy's capability of waging war by destroying his production facilities and communication network.

In Korea, application of strategic air power has been limited. The few strategic targets in North Korea, like the chemical complex at Pyongyang, were wiped out by B-29 bombers in the first weeks of war. Political decisions prevented strategic bombing of Manchuria, now supply center and the Korean fortress from which resistance forces to the Red armies in Korea.

Medium bombers of the Strategic Air Command now are assigned to tactical missions under the East Air Force's Boulder Command. This has been a profitable assignment, illustrating the practicality of flexibility in aircraft employment, a necessity in a tactical war.

So Korea is generally a tactical air war. In spite of the success of air power, Korean experience points up basic requirements for development of aircraft, weapons and equipment for successful future employment of air power in a larger tactical war.

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# MiGs Blast Trademark On U.S. Planes



FLAP of B-29 (left) was badly damaged and landing system of an F-86 (right) ripped away by MiG fire. Both returned, as did . . .



B-29 (left), with gaping hole in wing, and another hit-torned Sabre (right). Most damage done by MiG 17s and 19s.



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beings. After the first few days in July, 1958, F-80 Shooting Stars had driven the North Korean Air Force out of the sky. It was not until early 1951 that the Russian MIG-15 began taking jet age air-to-air combat. Since that time, the MIGs, although consistently out-bought by the F-86 Sabres, have convinced American air commanders that the U.S. must produce an air superior to lighter.

► **New concepts**—For a long time, it was thought the single purpose air-to-air fighter was an unnecessary luxury. The concept is gone. The combination of the F-106 and American prototype has kept the Sabres well ahead of the MIG so far, but the gap is narrowing. There's no question that plans for plans the MIG is about as good as the F-86 and in some respects better.

However, the U.S. probably can get another three years' superiority out of the Sabre by increasing its thrust and cutting down its weight.

North American engineers are studying how to increase the power plant in the present design. But experienced F-86 combat pilots believe close to 2,500 lb. of equipment can be stripped out as well. As one put it, "We have got to stop building turning aircraft and start making combat airplanes." A lot of the extra features for performance being become combat loads by adding to aircraft weight.

Not much can be done about the F-86 now in the firing line, but it is believed possible to load, cut the weight out of those airplanes coming off the production line. A new version of the F-106 is reportedly coming out soon with double the thrust of the first Sabres and is Korea, but the weight is also double, meaning that the new plane won't be any faster.

► **MIG vs. Zero**—To those who discount the need for cutting down weight, he compares the MIG to the light weight Japanese Zero, the "you know how those things" school pilots point out that the MIG is no Zero. The Communist pilot is protected by armor plating, he has an ejection seat, and he has an airplane that maneuvers well at high speed. Sabres pilots admit seeing MIGs escape them in the air-to-air struggle about 500 yards.

Can combat flies from one Sabre chase a MIG pulling away, making two wing rolls, and a pilot's without trouble. The Sabre was right on its Mark at the time.

Another air superiority requirement is pilot training. The U.S. has to train combat pilots to fly on the Mark rather than track them never to fly on the Mark. Air to air combat in MIGs often starts out at speeds over the Mach and far in the future, "and we don't show down to the red line until the battle's over." Pilots can't worry about aban-



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tail fin. They would rather ease back above in a spinning circle.

► **High Performance—**High bombers are a must for tactical air war. The success of a high performance airplane. Unfortunately, some early Air Force publicity about "being in the air" led to misinterpretation. High performance aircraft is required not just to enable pilot to see and protect himself in the air, but so he can carry out effective missions against ground targets, again and again without prohibitive aerial losses.

The advent of jet aircraft, in the time being at least, means complete air superiority is most readily. The best that can be hoped for, according to Air Force experts, is temporary local superiority for a limited period of time, that highspeed fighter bombers can hit enemy ground targets repeatedly with sudden attacks which will be almost impossible to block.

U. S. Marine Corps as tanks toward this view with the support of Maj. Gen. Gerald C. Thomas, said recently commander of the 1st Marine division in Korea. U. S. Navy aviators reluctantly admit that the AD Skyraider and other slow flying support aircraft are about washed up. The AD, without question the low-carriagest dive bomber in the business, is still doing a superb job in the Korean interdiction program, but there won't be long if and when an enemy decides to go after them with jet fighters.

And except for defense you don't stand much chance of success against an aggressive enemy, at face.

► **Kind Word for F-84—**The U. S. Air Force started out in Korea with the F-80 Skyraider. Soon for jet fighter business. The F-84 performed beyond all expectations. It has operated with over 1,000 lb. bombs, taking off under 6,000 ft. using water-ski-like methods in 57-sec. time. Other operational loads include four 500-lb. bombs, or two 100-lb. and four 125-lb. bombs. It has taken a phenomenal amount of battle punishment as well.

The other jet fighter bomber and is the F-84E Thunderjet. A heavier, longer range aircraft, the Thunderjet can carry considerably longer ranges. To continue profitable utilization of such fighter bombers, the U. S. must meet the pace of an armed enemy. Air Force experts are examining various systems now, including aircraft carrier catapults.

The present Thunderjets have often drawbacks. While the highly experienced pilot has little trouble making dive-bomb runs, the less-experienced find that the F-84 will not maneuver with them with its nose down. It quickly and easily will be through its Mach and pull apart. Today, a lot of the bombs dropped in the interdiction program



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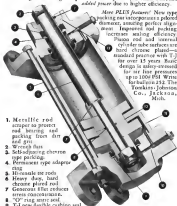
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Plasma rod and internal cylinder tube surfaces are hard chrome plated—a standard practice with T-J for over 15 years. Basic design is safety-oriented for air line pressures up to 1000 PSI. Write Tomkins-Johnson Co., Jackson, Mich.

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great. Conventional hydraulic lines are rated around 5,000 ft. This is comparable to just the low efficiency of the lighter bomber attack.

► **The Much Good—P91** 2. Further, you are getting a lighter bomber without the fat tail and the Mervins. Both are more than offset by the performance so far. But, like the Air Force the Navy also looks down at aircraft. The P91 is coming along with more power than the... 3, but so much gas has been added that the fuel performance is about the same as that of its predecessor.

Mobility and light bombers, B-76 and B-77, combined mightily in the Korean campaign. But no one would be a waste. The worked Combs and B-77 are considered the best candidates to take on.

For reconnaissance, T-10s Air Force's 67th T-10s and Navy's Wing Cyclones B-10s, B-11s and B-12s, some of which reach the best requirements of reconnaissance doctrine, which specifies first manned reconnaissance aircraft should be the fastest of their type. B-10s conduct the bulk of photographic missions deep behind the battle line, with B-11s handling the front observation on the front lines. B-12s handle a couple of front line missions per hour, doing less than the B-10s, but to allow down below 200 mph when taking photos that increase the camera equipment designed for use in the P-10 is too slow.

The B-12 is in the middle, but its camera has not yet been tested for use in reconnaissance. This is a big test for the B-12 in the field.

► **Fastest—B-12s** usually can detect any 5,000 ft target in Korea without too many target launches of the B-12s on the back of the line for long, through narrow, slow speed and lack of all weather capabilities.

"We are looking across what is called in Korea," says Lt. Col. D. P. Wyland, commander of the 1st Fast Air Force, "but what is all weather capability is an overall technical issue. When we are going to test the war, the other guy is forced to operate at night or in bad weather. If the other guy is a little better, then we have to work at night in the morning."

"Take our machine bomber experience in Korea for example. We got into night operations with the B-76 because the enemy had an excellent day night fighter. He doesn't have all weather capability so we are getting a free ride and doing as well as we can in the night."

"Not only are we getting a lot more than in all weather operations, it is a lot more at the beginning of the Korean conflict," says Wyland, "but

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most today



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# AERONAUTICAL ENGINEERING



FIRST ALPIN COMET I shown on recent market flight; differs only in minor points from standard Series 1 Comet. Shown in fact from Buffalo-Bacon test subject, which accumulated reviews of engine nacelles. Range is increased.

## Comet Engineering Gamble Nears Payoff

- Need has been met for new operating methods.
- And BOAC will test them soon in service.

This spring should see the payoff on one of the biggest gambles in aviation history—the development of the de Havilland Comet.

Starting in a matter of weeks, the big four-engine transport should be blasting its way toward South Africa. There's a lot of money riding on the deck seat of the Comet. More than just another new transport, the Comet is a new conception in air travel. For D.H.L. it is a grand achievement. For British Overseas Airways Corp. it is a bright prospect. And for the entire aviation of the world, it is a challenge.

If the Comet should be a disappointment, it would be a great setback to British aviation as a whole. The entire responsibility for proving the rightness of the design now rests with BOAC, and its crews and operating methods.

New methods have been under development for some time now, waiting for the arrival of the Comet. Here is a summary of the most important operational procedures and flight characteristics of the Comet, the world's most modern airliner.

► **Ground Handings**—The proximity of the panel gills in each side of the landing gear doors is a lack of turning moment which induces ground resis-



COMET COCKPIT gets reviews from BOAC developers as part of familiarization and crew training for the heavily scheduled airline.

istances, but the closeness of the aircraft enables it to turn for a much greater distance on one application of power than other craft. With the higher undercarriage, which is standard on all production models, 16 inches (two to each wheel) are provided, so that after landing, speed can be rapidly reduced and the aircraft braked on the runway instantly.

Approach speeds are just high, even at the maximum landing weight of

50,000 lb., and generous flap area with a sweep-up attitude enables the aircraft to land speed for the touchdown fairly rapidly.

From a standing start, the four Comet subjects have to be opened to about half power, so that once the aircraft has taken to the air, it should keep going until land up for take-off. Stopping and starting starts a very heavy fuel penalty.

The suggestion that turbines be used



**HOT AIR**  
For a  
**HOT BOMBER**  
from

**JOY AXIVANE**  
AIRCRAFT FANS

The Boeing B-47 travels at altitudes where the temperature is somewhat less than below. Since the cabin is pressurized, the pilot wears no mask. Unless prevented, the moisture in his breath would quickly condense and freeze on the Plexiglas windshield and canopy leaving him with no vision at all.

Boring engineers installed a Joy AXIVANE aircraft fan, with integral bearing unit, behind the instrument panel. Hot, dry air, blown through a Y-duct to both sides of the windshield, prevents frost at any altitude. It also eliminates the frosting of windshield fog upon rapid descent and when at sea.

This AXIVANE fan, standard on all B-47 bombers, is only 3½" in diameter and 6½" long, and weighs a scant 5 pounds, yet it produces 60 CFM at 5" W.G. Boreas rating is 1500 watts at 27 volts. For safety, the bearing element is thermomagnetically protected. A & N design specifications throughout.

Joy designs and builds each fan to the exact requirements for which it is intended. Each fan, therefore, is custom-engineered for highest efficiency. For many purposes such fans can be supplied from the standard line already designed. Right angle and end-stage fans available. Optional features include weights or fixed tilting, bonded or bonded connections, rubber mountings, vibrationless, and control systems when required.

Here are some of the many uses for Joy AXIVANE Aircraft Fans: Windshield de-icing, cabin heating, cabin ventilating, cockpit heating, cooling radio and electronic equipment, cooling voltage regulators, oil cooling, gear-box cooling, instrument cooling, air recirculation, and high-altitude pressurized heating.

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STEWART888 extra forward roller at Conest is handled to BOW. This action demonstrates eight principles, including 15 use in actual roller immediately at

for moving vehicles. In fact that these vehicles themselves run, while vehicle control padlocks. But having class of the loading system, with price flexible, enabling the Conest to start with a clear unobstructed run. Alternately, a special area may be set aside for jets, allowing single access for the critical ramp. Clearance from ramp is taken as necessary, as along beam clearance at the side of 70 ft. per area. The operator cannot afford to watch his payload in cargo until away at the end of the runway while waiting for final (runoff) clearance.

The design from exhaust blast and fire has been inventoried, for by the time the exhaust goes south the ground, this temperature is down to about 1600°. Again being the result of laminar and the much higher outside noise level, the jet aircraft is no more dangerous or uncomfortable than the commuter plane.

►Weather Forecasting—Outside the American and Western Europe, the network of upper air observation stations is situated at more run-outward and the forecasting of upper winds and temperatures at altitudes assigned by the Conest is a year thinking of accuracy. Despite the forecast effect of head and tail winds, in relation to air speed, wind effect is still critical. A headwind may vary 1500 mph distance with 500 ft. in the fact require more.

On the other hand, a 15 deg. rise in temperature, wind speed to require the same additional fuel.

This is beyond the rest of expectations. Temperature was at one time believed to be a critical factor, but it has been found that while high temperatures do reduce lower oper-

ating altitudes and lower air speeds, range is reduced less than 1 of 1% per degree.

The Conest staff will help solve the problem at once, by regular high-altitude operation and the collection of upper air data over a wide area, an existing data on jet air streams. These phenomena are likely to be of greater importance to the Conest than its present prime interest, but unless long along the flight path, will be rapidly covered at the aircraft's high cruising speed.

Jet stream: coincidental with the course must either be accepted or avoided by a change of altitude as of track both involving increased fuel consumption. A feature of jet operation is that, depending on outside air temperature, and meteorological ground weight, only one cruising altitude is possible if fuel consumption is to be kept within economic limits.

The layout of the flight forecast will probably require modification. Instead of the present pattern of cross sections covering the entire route, a series of cross-sections at various on the climb and descent at once and alternate altitudes will be of more value. A verbal or written description of weather conditions (cloud) surface, at low and medium cloud may of little significance to high altitude flight. Terminal two portions are required to calculate the landing weight, and takeoff weights as standards restricted by high temperature.

►Landing—The Conest, cruising well above normal sea levels, must still contend with wind on the climb and descent, or in the event of reduced low-altitude operation due to the loss of an engine. The aircraft is fitted

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Founded in the early days of 1928, Panagra (Pan American-Globe Airways) has expanded in South America with each passing year. It has grown from four planes in 1929 to a large fleet of modern Douglas DC-4s and other Douglas aircraft in 1952. In that first year of pioneering Panagra flew 285,000 revenue miles compared to 5,774,000 revenue miles in 1950. This rapid growth didn't come easily. South American air ports were mere steps hacked out of the jungle—weigher stations were few and far between, radio was almost unknown. Panagra started from scratch! Today, modern airfields testify to their success... up-to-date weather stations constantly alert aircraft of flying conditions... planes are fully equipped with a radio communications and navigation system. The Panagra fleet of DC-4s and DC-6s is completely flexible, adaptable. If, like Panagra, you are looking ahead to improving your service and further increasing your usefulness in the future, talk to Bendix Radio.

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Connect from Gander to New York at 3 1/2 and ETD Gander to 0300 GMT. Gander dispatch agents, New York negotiating approach clearance for 0300 GMT and New York advance clearance for 0615 takeoff of three aircraft, i.e. between 0612 and 0618 GMT. ETD Gander is therefore set back to 0315 and speed on flight is adjusted to arrive over New York at the time specified. While some allowance must be made for stacking, by this means the amount can be limited to a figure which does not affect the economy of operation to the disadvantage of the jet.

Direction is best effected at cruising altitude, but when marginal conditions exist, the dispatcher can delay his decision until the aircraft is overhead at 18,000 ft. At this altitude, the aircraft can reduce engine power to low-level conditions and make a rapid descent for landing. Alternatively, if conditions are still unfavorable, diversion can be effected from 18,000 ft. without unnecessary depletion of fuel reserves.

► **Navigation Methods**—With ground speeds of 400 and seven miles a minute the segments of navigation must be accurate to speed. An error of 100 miles in 15 minutes from intention to result is of little value if the aircraft has traveled 90 to 100 mi. in the mean time. If position can be determined within ten miles in 15 min., then is better than position within one mile in five minutes.

With the stage outlook available in the United States, navigation is simplified, and VOR/DME often provides good navigation at a glance. For more sparsely developed areas, however, must be placed on radio bearings and dead reckoning with the more conventional accurate methods of determining position regarded as the most accurate.

Due to the high operating altitudes, VHF range is greatly restricted and much more use can be made of the facility. Radio-telephony, while still a good standby, is also, even at the crowded speed of radio efforts. One other point worthy of mention is that with the radio-telephony of operating altitude which is a direct function of meteorological sight and temperature, vertical separation between traffic is not feasible. Air Traffic Control uses device means of lateral and longitudinal separation as the numbers of jets per altitude is appreciable constant.

► **Storm Schedule**—The speed of the Comet acts new problems in the scheduling of routes. Operating in the tropics and sub-tropics with high ground temperatures leads to long nights, and every instrument must be made to make each stage like the cool hours of the day or night. Passenger comfort source can be considered all while the

public apparatus if it is not always possible to schedule arrival and departure at times must wait, some attempts must be made to meet public desire.

Traveling at the speed of the Comet, time zones are crossed very rapidly so that days are apparently shortened or lengthened. There is little point in saving five hours on a schedule if the terminal is reached at 0100 local time, nor will business occur if the departure has to be fixed at a similar hour to provide a reasonably correct time leaving time.

Though this is no new problem, the high speed and short duration of the Comet renders it more acute, particularly when time spent on the ground represents nearly twice the air mileage lost by piston engine aircraft.

## THRUST & DRAG

Dr. W. F. Hiltner, of Armstrong Whitworth in England, says that the most design lesson in the thermal area, caused by the terrible heat generated by this function, (Hiltner is claimed to be the man who coined the phrase "anti-thermal")—probably the quietest engine-powered plane in existence. What he actually said was that near the speed of sound, drag rises suddenly "like a hammer against the future." And he says now that Week 3 on March 3 seems to be the upper limit for engines using aerodynamic compression of air (take-off, for example) for thrust. Week 4 or 5 seems to be the stopper.

Must defend sword for wartime technical services was recently presented to Mr. William C. Heath, chief design engineer of Solar Aircraft Co. Inc. in recognition of German developments in piston and jet engines. Heath was loaned to the government as a specialist consultant (so were many others) to follow in the footsteps of troops entering Germany and to study engine ideas at Kassel, Leipzig, Dusseldorf and Oberammergau. Most everyone else who worked in a similar capacity during the war got some kind of a citation; but Mr. Heath didn't. It's taken Army and Air Force a long time to get it around to it, but finally Heath's services were recognized and he got his citation as a Lieutenant present in 1952.

A consulting engineer was wondering all the while just at lunch. "Do you realize," he asked "that consulting engineering firms represent a wonderful pool of experienced manpower which probably could handle a lot of the specialized problems in the aircraft industry?" And apparently nobody recognizes that, because we get very little



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**Control of all assigned channels** between 118 and 136 megacycles shows actual frequency instead of channel letters or numbers... eliminates conversion chart.

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because from the aircraft industry? Well, I had always assumed that people knew that consultants were specialists, and that specialists ran generally the a special job faster and more economically than general practitioners. So perhaps here is one way for the extreme and rugged manufacturers to use the advantage of experienced engineers in the design of allied equipment and components.

Your pilots will get a kick out of an early flight test report from the engineers of Britain's Aeroplane and Aircraft Experimental Establishment. It's so:

## B.E.1 Certificate

This is to certify that the aeroplane B.E.1 has been thoroughly tested, by me and the major staff, with a 1400 h.p. engine with a top speed of 215 m.p.h. and sufficient petrol for one hour's flight at 50-55 m.p.h.

The rate of climb, tested at about 1000 ft. per minute up to 5000 ft. and found to be at the rate of 500 ft. per minute.

The machine has been inverted and accelerated from its centre and the works tested in three times the normal density. On examination after this test, the aeroplane showed no signs of defect.

Witness my hand this 10th day of December 1940.  
Sgt. J. H. Smith, C.E.D.

produced here from the pages of Staff Aviation News. Note: A few kind of 25 m.p.h. in 370 ft. per second for one hour's flight should be somewhere around 10 g's.

The "then and now" costs for producing aircraft are highlighted in *Aircraft Industries* Aero's publication, "Prices." Modern jet prototype, began in 1945, cost just under \$1 million, while World War II counterpart, smaller and less complex, had a lower performance, cost and over \$600,000. And for every engineering man hour expended as typical World War II plant, today's typical guided missile costs up 100 engineering man-hours. Other typical comparisons: Tool costs have soared—small milling machines in 1941 went for little more than \$7,000, while today's price exceeds \$15,000, inset lathe figures are \$5,175 against today's \$5,790, and E.O. plant bought \$8,900 in 1941 while price now is \$22,000.

Porcelain enamel may help jet air gun designers replace tandem shafts with less critical valvetree. Some corrosion-resistant enamel have been developed which will take 1,500 F. temperatures. And the Porcelain Enamel Institute says that these enamel are already in use on some jet engine combustion chambers, exhaust tail cones and deflector vanes.

—DAA

# Navy's newest sub hunter—the Martin Marlin— uses Pittsburgh Flexseal Safety Glass exclusively



THE NAVY has ordered a "submersible window" of the new Martin P3M-2 Marlin flying boat, equipped with the latest devices for detecting and destroying submarines. The standard windshield and side panels are exclusively Pittsburgh Flexseal Safety Glass.

Considered one of the United States' most powerful anti-submarine weapons, the Martin P3M-2 Marlin possesses an entirely new idea in flying boat design. Its long, sleek hull has the best water-tight seal the entire length of the ship.

Designing this completely new airplane presents problems, including glass and glazing for the cockpit enclosure. And, as in the case of many of America's other new planes, Pittsburgh engineers made valuable contributions.

As a result, the Glenn L. Martin Company has selected Pittsburgh Flexseal Safety Glass for the windshield and side panels of the cockpit enclosure.

That restrained glass-and-plastic enclosure provides the crew members with excellent all-around vision for their important mission.

Whether you are designing military or commercial aircraft, Pittsburgh will be glad to assist you with competent engineering help, as well as a complete selection of Safety Glass. Pittsburgh Plate Glass Company, 2300-2 Grant Building, Pittsburgh 13, Pa.



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ment. The design features of a semi-con-  
tinuous hydrogen liquefaction plant are  
described. The plant produced over 7,000  
lb of liquid hydrogen at a pressure of less  
than 60 psi at a production rate of nearly  
22 lb/hr. Methods of handling pressure  
loss, and pumping at 200 ft. lift of liquid  
hydrogen in rocket operations are also  
described.

On the basis of this operational experi-  
ence, it is believed that the large scale pro-  
duction and handling of liquid hydrogen in  
mobile rocket operations is feasible. As a  
result of the design experience gained in the  
work described herein, the design and con-  
struction of suitable liquefaction, storage,  
and mobile handling equipment can now be  
accomplished with a minimum expenditure of  
development funds.

Methods of maintaining the storage losses  
among liquid hydrogen containers are  
discussed. Additional research on this prob-  
lem may substantially be desired.

► **The Role of Research in Rocket Devel-**  
**opment.** F. F. Wagners, Director of Re-  
search, Rocket Motors Inc.

The expansion of isolated space has be-  
come a pressing problem because of the  
multiplication of the earth. Only the joint  
efforts of scientists and engineers can solve  
this problem.

The considerations of research in the past  
are discussed in a short historical survey.  
Then present research activities are briefly  
described, and the variety of problems it  
encountered. Finally, a list of questions  
confronted with the scientists of the future are

stated, specifically those concerned with  
astropropulsion fields.

The text survey shows that the mag-  
nitude and variety of problems require careful  
planning. A detailed description of the  
American and international organization of  
rocket research is given.

In conclusion, it is stated that achieve-  
ment of travel as space will require great dis-  
gust for mankind but she open the door to a  
brilliant future.

## Turboprop Propulsion

► **The Highspeed Propeller.** George W.  
Baily, Director of Engineering, Con-  
tinental Motors Corp., Propeller Division

The turbopropeller for use in transport  
and high altitude transport aircraft is the  
result of aerodynamic and structural research  
carried out since World War II.

The application of tests of a number of  
different propeller configurations including  
blades with sweepback, low aspect ratio and  
low thickness ratio to the design of tur-  
bojets and improved propellers is discussed.  
It is shown that good efficiency for the  
turbopropeller up to 4,000 ft. Mach num-  
ber and for the turbojet propeller through  
the transonic region and well into the  
supersonic region can be obtained.

Structural and allied problems are re-  
viewed, and it is indicated that the desired  
aerodynamic characteristics can be obtained  
with a structurally satisfactory design.

Overall performance of a high output  
turboprop engine with high transonic and  
supersonic propellers is presented. Other  
important performance characteristics of tur-  
bojet propellers with high takeoff thrust  
and engine thrust for aerodynamic lifting  
are outlined.

► **The Turboprop Airplane.** W. W. Fox,  
Patent Engineer, Consolidated Vultee Air-  
craft Corp.

The turboprop airplane, as we know it  
today, requires a number of a transition in  
thinking from the most design characteris-  
tics of reciprocating engine aircraft.  
To date, there have been two turboprop  
powered planes flown in the U. S. for an  
impossible total accumulative flying time  
of 710 hr.

The operation of a turboprop engine is a  
highly complex system where all compo-  
nent function properly.

Engine run and checkout procedures are  
very simple, and a turboprop airplane can  
be put into the air in much less time than  
an equivalent reciprocating engine powered  
airplane.

Even though turboprop aircraft are in the  
8 per cent of the aircraft stage of develop-  
ment, their future appears to be quite bright.

Continued research and development will  
provide a type of power plant that for ex-  
ample, the application of supercharging on  
gliders and for some specific turbo-  
jet engines.

## NACA Seeks Funds

NACA has asked House Armed  
Services Committee approval of \$19.7  
million budget for research on air-  
speeds up to 1,900 mph.



# Selected for the General Electric J-47 TURBOJET

## The LEAR Inlet Screen Retracting System

was selected for the General Electric J-47 Turbojet Engine —  
power plant for the aircraft of today and tomorrow. The inlet screen,  
which prevents debris from entering the jet engine, is electrically  
operated by LEAR actuators to provide an unobstructed intake.

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time-referenced capabilities are em-  
bedded in every LEAR Actuating and  
Control System.

LEAR leadership in the electro-mechan-  
ical field is reflected in the superior  
equipment used in advanced engine,  
airframe, and missile developments.

General Electric J-47 TURBOJET ENGINE is  
equipped with the LEAR SCREEN RETRACT-  
ING SYSTEM, typical of the many LEAR  
Control and Actuating Systems in aircraft  
service.



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and gear industry • Defense services • Aircraft carrier



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that makes your equipment the most  
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various types of valves and lubrication  
systems, Giannini piston pressure  
actuators are designed to with-  
stand extreme of vibration, tempera-  
ture, corrosion, which at the same time  
ensuring their moving and push load  
is never obstructed in. They are ideal  
for use in the following: • Machine tooling  
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**giannini**



## THE SHADOW OF

*Quality...*



### ...Cast by **STALWART** RUBBER PARTS

Products incorporating Stalwart custom-engineered rubber parts reflect the high quality of their components. These parts are mass-produced from compounds developed specifically for resistance to extreme temperatures, oil and gasoline, chemical action, abrasion or weather.

Stalwart rubber stocks can be supplied in precision molded, extruded, die-cut and lath-cut shapes having varying degrees of hardness, tensile strength and elongation to meet the demands of specific applications.

Stalwart is prepared to meet individual requirements as well as S.A.E. and A.S.T.M. specifications. Write today for the new 36-page illustrated catalog Number 5158-1 for additional details.



**STALWART RUBBER COMPANY**

200 Northfield Road • Bedford, Ohio

## Titanium Forging Gets Underway

Titanium bar forgings with excellent surface finishes are now being turned out in quantity by Kropf Forge Co., Chicago, Ill. The metal is of importance to aviation because of its resistance to high temperatures.

In a recent statement, Mr. Roy A. Kropf, president, said that 14 months of the company's research and test research had led to the developing of techniques for titanium forging procedures.

He said that the design and operation of the dies used were also important factors. The difficulties encountered in forging titanium were similar to those found with stainless steel, the metal is stiff, and it has an adverse action which causes it to increase the wear of dies. Close test positive control as well as experience are prerequisites for obtaining close tolerance work free from defects.

New and improved techniques are now being handled by Kropf Forge because of the higher density of the metals being specified for aircraft forgings. These new techniques will increase plant capacity as well as supply the extra parts required for these new forgings.

## Decca Flight Log Flying in Ashton

High-velocity tests of the Decca Flight Log, short range instrument aid which reads covers, Europe, are being currently made with the Avro Ashton flying laboratory.

Overflying the Channel Islands, heading to fly back across St. Helens, the Ashton is making accuracy checks of Decca at altitudes of seven miles and up. And the aid is being used to check the Ashton's high speed approach in the metropolitan control zone and the airway corridor which are centered on London.

Flight Plotter—Decca plots the flight path on a strip of paper which is mounted on the cockpit panel. Ground stations supply intelligence to the airborne unit which computes position and controls the display marking the map.

For the turboprop aircraft equipped with a servomechanism, Decca has built a new servomechanism which will accommodate flight speeds to high as 1,500 mph.

The Ashton, described as Avrocan West No. 28, 1915, is a converted high-altitude jet with four Rolls-Royce Nene turboprops. The particular Ashton used for these tests is based at Boscombe Down experimental airfield, and is one of six built by Avro for the Ministry of Supply.

## SPS aircraft fasteners



**STANDARD  
'SIX-DIGIT'  
ENGINE BOLTS**  
All listed diameters and selected wrenching types, A.M. specifications.



**NAS  
BREAK BOLTS**  
Close tolerance, high strength, full head type.



**NAS INTERNAL  
WRENCHING  
LOCK NUTS**  
Superior safety nut, sizes from 1/4" to 1 1/2".



**NAS INTERNAL  
WRENCHING  
LOCK NUTS**  
Latest NAS specifications. Threaded fully formed by rolling after heat treatment.

INFORMATION UPON REQUEST, ADDRESS DEPARTMENT 470

## FLEXLOC



**FLEXLOC SELF-  
LOCKING NUTS,  
REGULAR TYPE**

Both step and lock nuts. One-piece construction, no rivet or separate lock. Fully self-aligning. Threaded, 1/4" to 1 1/2" inches. Regular and FLEXLOC approved for temperatures to 350°F.



**FLEXLOC SELF-  
LOCKING NUTS,  
THIN TYPE**

Like their regular counterparts, yet conform to cramped conditions. Every thread, including the locking threads, formed in dies of tool steel of regular FLEXLOC features, but more weight and height. Aircraft approved, 1/4" to 1 1/2".



**FLEXLOC EXTERNAL  
WRENCHING NUTS**

Interpenetrate. Famous FLEXLOC self-locking principle and one-piece, self-aligning construction. Latest NAS specifications. Sizes from 1/4" to 1 1/2" NF. Thread Series Approved for temperatures to 350°F.

INFORMATION ABOUT FLEXLOC ON REQUEST, ADDRESS DEPARTMENT 91

AIRCRAFT PRODUCTS DIVISION

STANDARD PRESTEL STEEL CO., JENKINTOWN 3, PENNSYLVANIA





## EQUIPMENT

## SWA Theme: Get Them in the Air Quick

- Carrier has worked out many time-saving tricks.
- Result: average ground time of 4.7 minutes.

Mr. George L. Christian

**San Francisco**—Seattle airlines can have big problems. And one of the biggest jobs on Southwest Airlines is pushing in ground time to a minimum so that its high-skip-petty operations gets its passengers to destinations in the shortest time for the least money. Latest statistics show that SFA is doing pretty well at this—average ground time at five stations from touch-downs to take-off is a snappy 4.7 min.

► **The Blueprint**—Here is what SWA did to its fleet of two DC-3s to cut ground time to what may be an industry low minimum.

★ "Air Seal" doors were built and installed in all places. Company spokesmen say that the rapidly opened door (which eliminates need for loading ramp) was an SWA development and that the airline holds patents on the door.

• Forward cargo compartment was eliminated, passenger seats moved ahead, and one freight compartment enlarged. Result of the modifications was to speed cargo loading without sacrifice in cargo space. Forward compartment is so high that loading was difficult and required some sort of stand to reach it. Rear compartment is at a handy waist level.

- New cargo compartment lower sill was removed and access door enlarged to speed freight handling.

- Carry-on racks for passenger baggage were installed in the rear of the cabin just across the aisle from the entrance door.
- A door was cut in the bulkhead between the cabin and the cockpit.

rooms often will have cargo compartments to permit flight attendants to enter the area in flight and unpackage all freight to be unloaded at the next stop. This saves considerable time in bat-manure sorting.

\*Cast locks and landing gear pins are not used during the cruise climb steps during taxi and takeoff.

• Right engine is allowed to run at 500 rpm stops every five seconds for a friction test and the time and rpm to plug it



**WIND LANDING** by Southwest Airways  
DC-5 was first by a commercial airline, the  
company claims. First in the story the  
weather sequent tell before DDC-Away  
13, 10-01 am, weather rugged variable  
showers, rolling over, visibility 1/2 mi; after  
visibility 1/2 mi, fog, weather and wind unsteady.

- These passengers do not depart at the same stage
- **Rolling cockpit** checks have been removed. Checks, briefing engine run up, magnetic checks, etc., are performed during taxi to runway. Captain is responsible for making sure that all ground crew are working properly
- **Weight and balance** is worked out by the flight attendant at place taken from terminal to runway. Who does the time of loading pass to the runway? The flight attendant is also checked and completed. (Because passenger's duties are less somewhat reduced, including handling baggage, cargo and mail, SWA uses male flight attendants instead of stewardesses.)
- When the door opens, the passenger is signalled to wait outside the door is closed and the flight ready to operate

Three modifications of plans and procedures have paid off. Southwest's loading time averages 14 min. and has occasionally been compressed into 60

sec. Tackling stops take about five minutes, track time, according to nation officials, is to tell one task with two workers whenever possible. And when a plane lands on an average of once every 24 min. and run under a direct

attention to speed can mean the difference between success and failure.

Put on back for Southwest's counterpart came recently when the airline was a GAO Accounting Board's removal of its certificate of public convenience and necessity in Sept. 30, 1994. In granting the request, the CAB threw in this verdict: "We cannot but take pride in the outstanding performance of [Southwest]." ■

• **More Oil**—SWA has recently installed larger capacity oil pressure pumps in its engines. Reason was to eliminate possibility of oil starvation—a situation aggravated by the comparatively high number of takeoffs the airline's DC-10s are compelled to make, according to D. Devlin, director of engineering and maintenance.

Included in the modification are reworked all tanks. The hoppers were removed and oil silt was extended into the tank to divert oil against one of the tank's baffles. Purpose of the new silt configuration, Devcon pointed out, was to prevent oil evaporation and maintain oil slushiness which occasionally coated with the small expensive hoppers. Added advantage is that tank sits closer to, and thus shales formation at bottom of, concrete base. (ENR 1/26/83 p. 12)

of oil scuffing from use of the buffer. Devries suggested that the closer to rounded is better for proper feathering action.

SWA pilots carry 22 gal. of oil out of the main line and no less than 18 gal. back in. This additional oil (minimum capacity is 16½ gal.) maintains the safety factor and helps to cool the lubricant. SWA keeps those watch on its engines' oil consumption. If 5 qt./hr. is exceeded, the engine is pulled. Two overplants have already been added because of this procedure.

• **Radio Aids**—Southeast spokesmen claim the owner has developed plans, acceptable to the Civil Aeronautics Administration, for using commercial radio broadcast stations as non-directional beeping beacons. First approval, the airline says, was for its own aircraft.

Later," says SDA, "after more than 400 harassment approaches were made on stations at five different times without one incident where safety was impaired," the CAA approved the procedure for other airlines as its a standard basis.

Permissives may first be granted as a means to use a commercial broadcast station for housing after the carrier requests it and a specific radio station has been investigated to determine that no transmission is suitable to the proposed procedure, according to a CAT official.

First station to be CAT-approved, according to SBA, was KIDN, Monterey, Calif. The oscillator (master) unit was 500 used to transmit the KIDN identification was built in Southwest's radio shop.

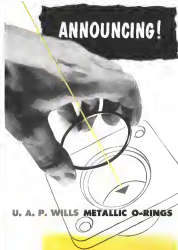
► **Manufactured Weather**—A "first"-SWA is proud of being the first commercial system to operate under "man-

distorted weather" conditions. Akins also says that, on Nov. 28, 1947, the "last 'manufactured weather' report showed a 62.8° weather bulletin."

On Dec. 18, the first scheduled winter (SWA) used "manufactured weather" to create "disturbance."

On the first landing, CMA reported the weather as "visibility ragged, variable + mist, showers, fog, coming over," 19 min. later, after FIDO had been in operation the report was amended to "visibility extended 1 mile, fog, coming 400 ft. . ."

The carrier has made over 100 scheduled landings at the LAES facility (which serves both Enbridge and Arctic) using "integrated landing aids." These wrap up high intensity runway lights, FIDO, ILS and CCA. Southwest says it has distributed information passed through these contractors to the airlines.



Now for the first time you can apply O-Rings for static seal locations that will create dimensional stability indefinitely... O-Rings impervious to gases, oils, or aqueous solutions... O-Rings that hold against pressures as high as 20000 psi and withstand temperatures limited only by the "physicals" of the metal... O-Rings you can install in any machine, remove, tighten up, use indefinitely, or meet at any time and place regardless of use.

Boes, U. A. J./With O-Rings are metallic bellows tubing filled with inert gas at 600 psi, are compressible when installed, provide metal-to-metal contact for positive pressure seal. Standard range of stainless or mild steel columns or metal plating available in experimental quantities: sizes from  $\frac{1}{16}$ " to  $\frac{1}{2}$ " OD or  $\frac{1}{8}$ " to 1" in diameter. Production quantities available too. Write for new catalog sheet bulletin No. 2222.





## the laws of motion



NEWTON

**N**ewton's laws of motion dictate the basic design features of instruments that measure rapidly varying physical phenomena. Statham transducers are one device for the measurement of acceleration, pressure, force and displacement. The transducer element, converting mechanical input to electrical output, provides the means whereby Statham instruments achieve accuracy under dynamic and static measuring conditions.



SWA'S COMPACT ENGINE worked shop work for mobile customers too



LITTLE CRESCENT CITY (top, 1,600) generated 4,000 SWA passages last year.

transport industry for its information and guidance.

► **SWA.** Boarding-Southwest officials said their advice could not be taken as authority full and overhead. Operators are trained to bare necessities. SWA airports are intended "bars" and there are no standards. Its passengers fly without food service, no crew gals, coffee or valets. Water is provided.

• **Being in of prime importance to a pass-up, gas-down operations like SWA's especially because of some of the short routes it flies. The airline is changing over to Goodrich heavy duty brakes (Model B1453). Tests run by the airline indicate that its planes should be able to make up approximately 2,400 landings before requiring change, according to Chrysler. It said the Goodrich units gave better braking and were cheaper to maintain. Old brake linings wore out at about 1,600 landings.**

• **Southwest's conduct (they take care of all the airline's requirements) and some outside work, too) except for the employees—there is no space in the establishment to take care that activity under several circumstances. (In one corner, John Connelly, president, runs his sales—manufacture of a model airplane engine dubbed "Thunderbolt" after the**

SWA emblem which features the land device).

• **Warning flags of bright yellow are displayed at some of the tender fields on SWA's route to alert pilots that that one of the airline's flights is approaching. The airline Southwest's pilots to make straight approach most of the time and avoid low-lying terrain.**

• **The airline operates eight 20- and two 27-passenger DC-3s. The latter have two rows of three seats giving unusually ample room for such a high-density arrangement. SWA operates 1,272 route miles, from the southern terminus Medford, Ore., to the northern, Los Angeles. Average flight into 24 min., distance at average bay is under 80 miles. Performance factor is quoted at 97.5% and load factor at 52% for 1951. Unlabeled is about 6 ft.**

• **Pilots use a public address system to keep passengers informed of points of interest in route (one pilot reportedly heard on the Rome Road game a few years ago and circled the Pasadena sky domes to give his passengers a high graduated seat view).**

Problems in the true state of the world, Southwest had only a million dollars worth of contracting traffic in 1951 to American Airlines, Pan American

World Airways, Texas World Airlines, United Air Lines and Western Air Lines at San Francisco, Los Angeles and Medford.

It established its new non-directional radio beacons at Fort Stock and Crescent City, Calif., to give those towns their first flights under IFR conditions.

Crescent City—a community of 1,689 population—generated some 5,000 passages for 1951.

No major changes of state structure in operations are contemplated in the future as a result of CAA's removal of its certificate. Company officials told American Wings that "although Southwest is constantly working for expansion and its DC-3s, it has no present outlook in mind which would indicate replacement of the DC-3 by our partners in state structure."



## Machine Moves Heavy, Bulky Loads

A quarter, custom sew to save heavy and bulky loads has been found by personnel at Kelly Air Force Base, San Antonio, Tex.

Example of the lifting type machine's efficiency: a single Traveler (make name of the machine) and one operator moved a metal section of a 36-wing (not cut) 3 in. x 10 in. C-channel was 48 ft long, 7 ft high and 3 ft wide. Weight was approximately 5,000 lb.

As have said that former method would have required two full lift trucks, a crane hoist and four or five men. And operators would have taken about four times as long to accomplish as with the Traveler.

The Traveler is manufactured by Lull Mfg. Co., 3412 E. 44th St., Minneapolis, Minn.

We asked 488 'Experts' to compare MICROTOMICS with the drawing pencils they were using...

# MICROTOMIC

Our 'experts' were engineers, architects, draftsmen, pencil-sharpeners—drawing pencil buyers and users like yourself.

The test they made was to compare the uniformity of 2 MICROTOMIC pencils of the same degree, with that of 3 same-degree pencils they were using.

488 of them—each averaging 94% of those who made the test—picked the new MICROTOMIC Drawing Pencil as "more uniform."

What's more, 304 of these 'experts' within a month said they didn't want to change MICROTOMIC, or intended to specify MICROTOMICS on their next pencil order!

free! Try the against test yourself

## MAIL FOR FREE TEST PENCILS!

EDWARD FAIR PENCIL CO., Dept. AW-2  
27 Greenpoint Avenue, Brooklyn 15, N.Y.

Let this be just the beginning of it. Approx. MICROTOMIC

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_



# Panagra depends on EDISON FIRE DETECTION



"... (we) know for sure that the system is working properly."

**PAN AMERICAN AIRWAYS INC.**  
INSTRUMENT DIVISION  
THOMAS A. EDISON, Incorporated  
21 Lakeside Avenue  
Rye, Orange, New Jersey

The engines of Panagra's DC-4s are equipped by Edison Fire Detectors.

For defense, DC-4's Intercommunications provide a radio which depends for dependability from the Edison Fire Detector system of the positive flight instruments Panagra crew uses for time - so the ground is in flight.

The Edison system has given completely dependable performance, and has contributed much to a safe arrival.

Very truly yours,  
*Thomas A. Edison*  
Vice President - Operations

## HERE'S HOW THE TEST FEATURE WORKS--

When the test switch on the pilot's compartment is engaged, a diagnostic current pulse travels along each detector in the circuit. This guarantees the integrity of the circuit and the detector themselves. And once the test current is generated by a radio-transmitted diagnostic, the system checks automatic control for complete safety.

Previously every major air line in the U.S.A. depends on EDISON for accurate test but see Bulletin A701A-5001.

**Thomas A. Edison  
INCORPORATED**

Instrument Division  
21 Lakeside Avenue, West Orange, N. J.  
Manufacturers of Ground Resistance Tests,  
Thermocouple Indicators and Alarm Systems,  
Signal Transmitters

YOU CAN ALWAYS RELY ON EDISON

## Alcoa Hard Coating Licenses Available

The Aluminum Company of America has announced availability of hard coating process, including its Alcoa oxide process, to the industry under licensing arrangements.

Titanium provided by this method toughest corrosion surface, so that fast loading and no loss suffered by the erosion of wear, abrasion, heat erosion and corrosion. Because of their increased hardness, aluminum parts sometimes can be substituted for steel parts, thus saving weight. The wear resistant finisher not acidic oxide coatings which are integral with the metal they protect. Parts located in that very slowly are extensively used in aircraft, Alcoa points out.

The company announced southeast coast, that it has acquired patent rights to the Martin Hard Coating Process from the Glenn E. Martin Co. This is said to be similar to the Alcoa oxide process. The Martin method has been used successfully on parts such as gears and pistons, pistons, rock screws, cone mechanisms, turbine vaneless blades, leading edges of high speed aircraft and other assemblies.



## TECO'S HIGH-DENSITY SEAT

The seat, made by Transport Equipment Co., comes in two basic frame dimensions, the standard width and a slightly wider version offered the de luxe luxury seat. The Backrest, Cold, non-tiltable arm that the seat will take up to 90° as an air-lining load, is built on a lightweight, all-steel electro-mechanical structure, and features a flexion type metal-coated mechanism. The latter allows passenger to select from an infinite number of comfort adjustments instead of the conventional notched adjust seat chair. Adjustment has been developed, and seat pockets have a new recessed base being to permit change of leg position. The seat, labeled TE-514, weighs 25 lb. for the single seat, 45 lb. for the double, and 75 lb. for the triple. Manufacturers say that it is currently going into production for Trans World Airlines coach configurations.

# NEW VICKERS EDV\* PUMP



\*Electrically Depressurized Variable

The new Vickers EDV Pump is a variable delivery, piston type pump which automatically delivers the hydraulic fluid at rates from zero to full rated volume... governed by the demand of the load. In addition, an electrical control latches the pump at zero delivery and pressure when no fluid is required. The instant there is any demand, the pump automatically delivers the volume of fluid required at full pressure.

This arrangement has many advantages, particularly on long flights. In the first place, the power required by the pump in the "latched zero" position is negligible. Fuel savings in the order of 700 lb. per flight have been estimated. This saving can be used to increase payload or to extend range.

As the pump does not circulate any fluid in the "latched zero" position, if any loss is eliminated (leak, by gasket) fluid loss is confined to that loss... the pump does not empty the reservoir.

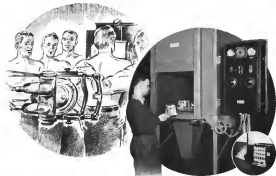
The pump is not stopped in the "latched zero" position... it operates at normal speed but at no load. It is ready the instant demand occurs... nothing has to be brought up to speed. Other advantages are low maintenance costs and longer periods between overhauls. It can often simplify hydraulic systems. For additional information on the Vickers EDV Pump, ask for Bulletin A 5203.

**AUTOMATICALLY  
DEPRESSURIZES**  
entire hydraulic system  
when demand ceases

**AUTOMATICALLY  
RESTORES**  
system pressure at  
instant demand reoccurs

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DIVISION OF THE SPERRY CORPORATION  
ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921





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**D**URING the production of your Die Casting requirements here at Parker, specially designed X-Ray equipment is frequently used to carefully check your castings. From the original planning stage through the finished castings, a 16-Post Production Control System analyzes each phase of production, thus guaranteeing that **YOUR** requirements will be met... exactly. For more than a half century Parker research has helped our customers obtain the finest die castings possible. Parker's X-Ray testing technique is another example of how Parker's long experience pays off for **YOU!**

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of Die Castings  
-- THINK OF

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Parker White-Metal Company • 2153 McKinley Ave., Erie, Penn.

## NEW AVIATION PRODUCTS



### Fuel Coupling

A fuel coupling for aircraft which positively shuts off flow when it is disconnected, yet leaves the passage completely clear so there is no pressure drop when it is connected, is being produced by E. B. Wiggins Oil Tool Co.

The coupling utilizes a flapper valve to block the fuel passage when it is separated. It is conically shaped to provide extra space for the flapper due to retract so that the main fuel passage is left unobstructed when both halves of the coupling are engaged. Flapper actuates first against wall of the seat. A spring inside the coupling keeps the flapper down into the fuel passage when the right half of the coupling is pulled away.

E. B. Wiggins Oil Tool Co., Aircraft Division, 1420 E. Olympic Blvd., Los Angeles



### Pneumatic Valve

A check valve for use in high pressure air or nitrogen systems in the latest addition to the line of "Carlin Seal" products produced by James Ford-Chek.

The valve, 200A-ATC, operates through a pressure range from zero to 1,000 psi, is pressure to 6,000 psi and has a burst pressure of 7,500 psi. There is no leakage through its normal operating range, even the reverse. And it is built to perform reliably through temperature from -65 to 145°F.

The seal provides tight sealing not only at high pressure, but at very low pressure differentials, the firm states. "O" rings furnished are AN 6250 compound, 90 diameter, necked to

AN 6227 size. Seals AN 6227 rings joined "O" rings can be used for easier gasket replacement. Working about 1 in. in length and 1/2 in. in diameter.

James Ford-Chek, Pasadena, Calif.



### Sealed Rectifiers

A new line of hermetically sealed silicon rectifiers is available from the International Rectifier Corp. The sealed units are filled with inert gas.

The hermetic sealing allows operation under environmental conditions while also permitting quick replacement of the rectifier during maintenance.

The unit illustrated is rated at 750 v. max., 500 v. peak reverse, 125 ma., 100 v. d.c. output at 50°C. Half wave and bridge circuits are also available.

International Rectifier Corp., 1521 E. Grand Ave., El Segundo, Calif.

### Checks Cabin Leaks

A test not designed to measure leakage rate of pressurized cabins in aircraft has been developed by Engineering Associates.

The unit is a direct reading type, and does not require skilled personnel to operate, according to the company. It is an oxygen type inflow meter. Air introduced to the cabin for test purposes is controlled manually by test valve and air flow rate is indicated directly on one gage. The company emphasizes no charts, mathematical calculations, etc., are required to find leakage rate.

Sets can be supplied for a wide range of flow rates, encompassing types for checking out pressurized cockpits to higher type aircraft. One of the latter type has a flow capacity of 13 ft<sup>3</sup>/min. and includes a cabin pressure gage and canopy seal pressure regulator and gage. Units weigh about 30 lb.



**H-5000  
Flush  
Latch**

an Example  
of **HARTWELL SERVICE**

Hartwell service is based upon the determination to always have available the correct latch, whatever the usage. The H-5000 and its accessories, the heavy-duty H-5009, for example, were developed by us to provide the advantages of our already proven trigger action latches for modern high speed planes in which external load conditions are so severe.

Other latches are constantly being developed to meet various special applications.

We invite you to take advantage of Hartwell's engineering and manufacturing know-how acquired during well over a decade of sub-investigated experience in serving the aircraft industry.



Write for new  
Flush Latch and  
Trigger Latch

**HARTWELL**  
AVIATION SUPPLY COMPANY

8335 Van Ness Boulevard  
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Manufacturers of  
HARTWELL Cable Ties  
HARTWELL Aircraft Fittings









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AIR FREIGHT

Thirty-five fast Flying Tiger Air Freight cargo planes give you instant-wide coverage door-to-door service 263 days of the year to bring your products to any distant market economically.

Expand your markets quickly—keep up with your Air Freight needs, regardless of shipping volume. Call Flying Tiger Air Freight for rates and express rates. Just write us in care of our annual calendar to your business representative.

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Anywhere, Anytime, Anything

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throughout the world.

WORLD'S LARGEST AIRCRAFT LEASE  
CONTRACT AIR FREIGHT AIRCRAFT

## LETTERS

### No More Murco

Please stop calling us "Murco." The day before yesterday, a staff member at Boeing Air Lines, which is correct but the "the" is wrong, and the "murco" is an officially named trademark. Those of us who know Cape Air know trademarks would be much appreciated if all publications would not use our correct title.

Sincerely,

Art Fink Flight Test Center  
Tomball Air Force Base  
Edwards, Calif.

### Woops!

My 1 call your attention to the front cover of *American Week*, Jan. 7, 1972. Careless advertisement.

I might be wrong, but I can't see any reason for having had that headline on the back that said the back of the plane is 404. If it is all right, some one ought to be strictly supervised for writing these letter columns. I sincerely hope that it is not the picture of Oliver L. Martin Co.

R. E. Myers

Aviation Services  
Thousand, Calif.

(Another note, John F. Novak, *Aviation Week*, also reported about the advertisement. We quote from Goodrich's reply—Ed.)

In the interest of good hygiene, the airplane was "dipped" over and, as a result, all the safety signs on the windshield appear to be, definitely, backward. The editorial staff is definitely aware of the picture that this air accident has taken, because the through air actually left hand turn. We entered the sign into the right air column and, therefore, the picture was published with the safety warning appearing in error.

R. E. Goodrich  
Aviation Products Division  
Goodrich Tire & Rubber Co., Inc.  
Akron 16, Ohio

### Praise

I have just finished reading your editorial, "Cautions to Bush Ties," which appeared in the February 15, 1972 issue of *AVIATION WEEK*.

The editorial is excellent, especially your graphic right, note and text.

Donna M. Nixson, Chairman  
Civil Aeronautics Board  
Washington 25, D. C.

I have had a lot of fine comments on your story about Los Angeles Airways, and I want you to know that I appreciate it. . . .

C. M. Reaves, President  
Los Angeles Airways, Inc.  
P. O. Box 10195, Airport Station  
Los Angeles 45, Calif.

My heartiest congratulations for the very thorough manner in which David Anderson headed on Devel aircraft engine development in *American Week* Feb. 4.

L. M. Stevens, President  
Devel Power, Inc.  
Red Bank Hotel  
Bristol, Pa.

We just finished reading the excellent article George Chastain wrote on *Columbus Capital Aviation*. We have ordered 1,000 copies for widespread distribution in airplane and pocket, tablet cover, literature folders and direct mail pieces.

Hal Tabor  
Director of Public Relations  
Columbus Capital Aviation  
Lockwood Air Terminal  
Fairfield, Calif.

### Real Coffee

As a million-cups-of-coffee drinking, I read with amazement Capt. Robinson's article, in which he suggested other coffee did not attempt to feature the best cup of coffee coffee.

Capt. Robinson might be equally amazed to learn that one airline has been doing so for the past year. Capital Gage Co., Inc., a noncommercial airline, temporarily can.



OML 100-DC-6 bottom down cup of "desirable temperature" from new GE unit.

related to the statement in the U.S. is, more apparently decided that the Army needed direct coffee in its units. Control established a two-page procedure on C-46s, and had the information relayed to you in the February 15, 1972 issue of *AVIATION WEEK*. The editorial is excellent, especially your graphic right, note and text.

Max M. Anderson  
13 Tanager Avenue  
Baltimore Heights, Md. 21

### Presses Needed

Understand structural integrity as one of the major profit from large passenger,

and by all means continue to spotlight the press large passenger. The flying press is the design for the material where the work is. Sections selected by over 100 airlines can be continued around the globe. Sections requiring additional can be totally affected, not just temporarily but permanently as well. Special sections, even having double curvature should be considered if we could only get the flying capacity and experience.

Press-hinged test specimens for research have been as available as your report on airline passenger aircraft components have been. Thousands of studies, and tests of end prototypes, however, all confirm that press hinged would permit maximum, and as every case successfully large gain in structural efficiency. From the standpoint of structural efficiency alone, that is, from the standpoint of reducing the structural weight of American aircraft, large hinged press are clearly superior.

M. F. D.  
Langley Field, Va.

### Scare Headlines

We have just seen the ad which you placed in *Editor & Publisher* under the rubric, "Fighting Under Headlines."

We had your article in the advertising section to the industry, the which we saw to appear on the back of 1000 Centimes.

Robert Conover,  
Vice President Traffic & Sales  
McClintock Adams  
Kansas City, Mo.

Congratulations on this editorial, and further congratulations on your work during the year 1971. Many thanks to you and S. L. Smith, President Air Transport, Inc., Washington, D. C.

Thanks for sending me a copy of the full page advertisement that *American Week* has placed in the Dec. 25 issue of *Editor & Publisher*.

On behalf of Capital Aviation, I want you to know we are most appreciative of the action on your part. The fact that a magazine of your quality would spend money to place this matter before the readership of *Editor & Publisher*, in my opinion, will make it a most effective public relations move for our industry.

I think the public will pay objective attention and do not put demands to any industry. . . .

Herbert Diers,  
Secretary and Director of Public Relations  
Capital Aviation  
Washington, D. C.

*American Week* and *McClintock Adams* are to be commended for publishing your editorial in Dec. 15 in *Editor & Publisher*. While the industry is not a great deal of good, for which we all should be most appreciative.

B. E. Johnston,  
Vice President  
United Air Lines  
Chicago 34, Ill.

## Announcing... Our New Head Office

Due to the rapid expansion of our organization it has been found necessary to acquire larger premises. We are now installed at—

**15 GREAT CUMBERLAND PLACE  
LONDON W1**

(Not far from the Roosevelt Memorial in Grosvenor Square)

We hope all our friends in the American Aircraft Industry will make a note of this new address.

## AVIATION TRADERS LIMITED Aeronautical Engineers & Consultants

Telephone  
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"AVIATEX", London

**PILOTS PREFER**

**THE PROPELLER THAT'S**

*Right on the Nose*

On the field or in the air, experience or anywhere, you'll find more personal pleasure—every pilot will. SENSENGH propellers then are your choice.

**METAL . . .** Fixed Pitch CAA approved up to 125 hp.

**SKYBLADE . . .** Controlblade CAA approved up to 165 hp.

**WOOD . . .** Fixed Pitch CAA approved up to 235 hp.

**TEST CLIPS** up to 5000 hp.

Write for brochure and price list  
SENSENGH CORP., LANGFORD, PA.

Propeller service and all engine work—no franchise fees—no royalties

For Dependable  
Hose Connections

**WITTEK**

STAINLESS STEEL

*Aviation*

HOSE CLAMPS

TYPE 102 (Standard—  
with one screw for tightening)

TYPE 102B (Standard—  
with flexible fitting)

Refer to Bulletin B or Bulletin Specifications—C.A.B. Approval

**WITTEK**

Manufacturing Co.

4202-15 West 24th Street, Chicago 22, Illinois



## The BENDIX IGNITION ANALYZER Checks Both Plugs and Ignition Units!

**Result: ECONOMY**

**IGNITION UNITS AND SPARK PLUGS ARE  
NOT DISCARDED BEFORE THEIR TIME!**

An airline recently reported that in one month it removed a great number of ignition units or spark plugs. Later tests showed that 55% of these units were satisfactory and most should have been removed from the engine. Bendix records for spark plugs showed that 94% of the plugs removed were still in good condition. If your maintenance records show similar inefficiencies, you can correct the situation with a Bendix Ignition Analyzer. It is the analyzer that locates present and impending difficulties. Your men will be able to make fast correction by replacing only the bad part. Ignition units and plugs will give longer service . . . overhead facilities can be substantially reduced . . . engine run-up time will be considerably lessened. Doesn't that make the use of a Bendix Ignition Analyzer for daily aircraft operation a trend in your equipment planning?

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the Bendix Ignition Analyzer.

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## Costs Less—Does More

The Bendix Ignition Analyzer is available for other aircraft or portable-engine installations. It can be used with either high or low tension magneto or battery ignition. It is the ignition analyzer that can prevent spark plug failure before it occurs . . . makes an efficient check of more than one spark plug at a time and do so in a large, easy to read screen . . . yet it costs less than other comparable analyzers.

# AIR TRANSPORT

## Crashes Spur Action on Prop Reversals

- CAA experts go into huddle with manufacturers in effort to eliminate dangers of in-flight reversal.
- Eight known instances of accidental reversal on transports in flight, 15 on ground are revealed.

By F. Lee Moore

In an effort to eliminate accidental propeller reversal on transports during flight—a problem now considered serious in light of several crashes—two teams of civil aviation experts have from Washington but work to confer with West Coast manufacturers.

They propose to examine various types of propeller controls looking for potential trouble points. They also will do studies from CAA Administrator Charles F. Hoots to take any steps necessary to eliminate occurrence of known in-flight prop reversals and to search for other possible propeller reversing dangers.

The two transport manufacturers not spared by the revelation that the National Aeronautics Administration DC-6 which crashed into Elizabeth, N. J., last month killing 72 was found to have one of its props in reverse gear. It was pointed out that a sudden reversal of prop can lead to a crash because of the resulting loss of lift, abnormal control forces and slowing of speed.

Eight Known Reversals—CAA has collected data showing that there have been eight confirmed and six suspected cases of accidental in-flight prop reversal in recent operations to date. There have been 15 known cases of accidental reversal while transports were on the ground. The failure rate developed from the known cases, is equivalent to one accidental in-flight reversal per 1,013 177 engine flight hours.

At least two airlines have experienced fatal prop reversal in flight in the last three years and two other fatal crashes are suspected to have resulted from the same cause. One near-fatal crash was due to prop reversal.

The Known—The five teams of CAA specialists will try to coordinate two in-depth groups working concurrently to end the risk of accidental prop reversal. One team is on search design group to work on prop inefficiency and acceleration. The other is a propeller design team.

The search design group is led by CAA propeller design supervisor

David L. Pomer. Other members are Donald B. Miles, from Hoots's office; Irving Fine, electrical specialist of CAA; Anthony Equipment Engineering; and Nicholas S. Dole, associated research engineer and design supervisor of the Aeronautics division of CAA. Bureau of Safety Regulation. They will visit Douglas, Convair, Lockheed and Boeing plants on the Coast, in conference with CAA and then return Standard propeller experts, local CAA engineers and airline and pilot representatives. Later, they will visit the Martin plant.

The propeller design team includes J. C. Meiss, CAA prop design evaluation specialist, and E. F. Conklin, CAA propeller design and vibration expert. They will work closely with CAA and Douglas Standard experts, but all will make the trip to meet aircraft manufacturers.

Battle of Reversals—Quest for fool proof propeller reversing systems has been a continuing effort since the design, construction and in-flight behavior of all propeller transports with reversible props, that every time the engines and manufacturers thought they had the system solved, modern versions of as well as unexpected accidental prop reversal turned up.

Here's a brief chronology of an partial incidents in prop reversal history and efforts made to prevent recurrence.

•NEA Canada, Portland, Me. on Aug. 11, 1946, a Northwest Constellation in flight approach to Portland, Me., when its propeller failed and reversed. The pilot pulled back both throttles. The plane dropped into the airport backing the landing gear and shoving it free. All 25 aboard escaped.

Some were found to be a check order and it was disclosed that the NEA preflighting checklist didn't include positive check to see whether selected prop was stuck. This released in the so-called manual throttle locking device. It has a prominent red warning flag.

Increased maintenance for previous loss of maintenance was ordered.

Some CAA CAA experts believe that a check selected in a clockwise case of the National Airlines crash at Philadelphia.

•NWA 242, Minneapolis. On a Northwest trailing flight north of Minneapolis Oct. 13, 1950, a Martin 2-12 crashed, killing all on board. The flight prop was found in reverse gear. Chief theory as to cause was that during feathering of prop an intermittent stall occurred in the system causing it to reverse.

During the investigation, two prop system customers of accidental reversal were disclosed. A Martin test pilot experienced one in flight but managed to keep control of the plane and make a forced landing. Cause of that one was a special test installation put on the plane propeller.

There also was a previous accidental reversal during ground ramp at the Martin plant. This one was traced to interference during the propeller test in the same effect well.

During CAA hearing on the Martin propeller crash, Douglas Standard propeller design engineer, W. Fred H. Shaw, testified that the 242's (and the DC-6) did not have separate controls for prop reversal controls, although such was recommended by Douglas Standard. That was the most pertinent statement in a shock Shaw made at the hearing.

In the last maintenance check that we made to our basic maintenance we have always recommended that a good deal of attention be paid to both the selected thrust and the propeller control control, adjustable, at least the selected thrust, if not both be carried from the nacelle from the engine nose back through the nacelle and the wing into the engine strut and through the nacelle and the wing into the engine structure in a joint connection.

Question by CAA presiding officer: Was R. O'Brien?

"Do you know whether or not that kind of installation was found on the Martin 2-12 aircraft?"

A "No, I believe that the selected reverse thrust was caused by a handle that when used, malfunctioned when which are present there for various reasons."

"And furthermore, the function at the handle in the selected area which cause at various position points in the aircraft structure are made on manual



struction holes and structural internal stress. I don't think I am entitled to go into detail on that connection."

■ **NWA 2-9-82, Rondeau, Wash.** A Northwest 2-9-82 cockpit voice recorder, on Jan. 16, taking off 103 strand Beth crop, was found in a forest about 100 miles, but in different position. The plane was damaged beyond chance for analysis.

Only real clue to the ill-fated crash, just before the crash pilot called Spokane and said, "We're in trouble. The wind has gone out! Coming down fast." The roller took was found 103 strand 8 deg. from 10 deg. left bank, indicating the pilot had possibly sustained an embolism condition caused by hypoxia or hypoxia.

Although there was no definite evidence of prop reversal, the outside engine combined with post experience was enough for the CAB Accident Investigation Bureau to recommend to CAB Administrator a complete overhaul of prop reversal controls on all turboprop engines. Northwest Standard prop, but the change already had been made on the 707 at the insistence of NWA pilots. No other was used by CAB.

The DC-6 and later American Airlines Controls, continued to operate without separate overhaul of prop reversal controls.

■ **AA Coates, Elizabeth, N. J.** An American Airlines Coates approach on New York Airport Jan. 22 turned right from the glide path and then plunged, killing all 25 aboard and eight adjacent residents. Investigators leave from the report rider and location of the crash that the plane entered right from the glide path, then, before it then stalled and plunged. But the more complete investigation of the plane leaves them with little evidence as to what might have caused a reverse and stall. Both propellers showed no forward thrust, but different pitch.

However, as with the similar Northwest 2-9-82 incident in Rondeau, prop reversal is a common subject. The House Committee on Commerce investigation leaves most blame to the prop reversal rather than about other investigations. It is agreed pilot could have corrected prop back out of reversal after leaving the controls, but too late. However, there's little evidence except the crew from inside to substantiate this theory.

American had experienced one last-est prop reversal on a Coates during ground run on December, and had indication of during the prop control controls before that.

■ **NAL DC-6, Elizabeth, N. J.** A Northwest DC-6 crashed shortly after takeoff from Newark Airport on Jan. 11, 1982, 12. The No. 1 prop was found inverted and No. 4 leftward.

On Feb. 13 and 14 CAB test filed

grants to its regional agents ordering all operators of DC-6, DC-6A and DC-6B to get prop-control controls in separate controls unless from other way to purchase possibility of inadvertent reversal. On Feb. 15 American Airlines received a letter order to update the prop-reversing controls on its Coates. Later, American already had started making the change.

However, this change order by CAB was greatly generalized on the basis of a few percent possibility of undetected prop reversal. There is no direct evidence that "bleeding" the prop

controls with other wing caused after the National DC-6 or American Coates crashes. Douglas engineers had never felt that separate overhaul of these units was necessary on the DC-6, although Houghton Standard and CAB utility arrangements recommended it. When American converted its Coates from Coates props to Hamilton Standard ones a year ago, it handled the prop controls the same as on the later DC-6B pre-pilot installation. The sale of Hamilton Standard, although all factory installed Coates prop systems were separately wired.

## CAB Ultimatum on Coach Fares

- Five airlines ordered to cut their night rates.
- Alternative, Board says, is to quit night coach.

A 4-cent-a-night cut on coach fares appears destined to become a common scheduled subject, effective Apr. 1.

CAB has ordered five big airlines either to cut their night coach fares to 4 cents a mile or to quit out of the night coach business. The five lines are Capital, Eastern, Northwest, United and Western.

When he asked to lower coach fares voluntarily, despite strong CAB policy statement of last December saying the lines should file 4-cent night cut each year by Mar. 1 to become effective Apr. 1. Many airlines say they thought the raising of CAB policy was all because of rising costs. But five airlines defied CAB policy and failed to announce lower rates by deadline.

While CAB has suspended their night coach fare effective Apr. 1, it has granted these special permission to file 4-cent cuts this month to become effective Apr. 1, although the general regulation requires a month's advance notice.

■ **Alternative-CAB members and staff members generally believe the airlines must now capitulate and file coach fares to 4 cents per mile operation—leave 10 p.m. to 4 a.m. But they have the technical alternative of suspending the service rather than lowering the price. But that would defy the Board's basic intent. Its announced policy is for the airlines to expand their present coach service.**

If an airline chooses to fight it out with CAB on the issue, the Board is expected to move an immediate order to drop coach fares until the airline should not operate the service or have CAB designate another airline to replace that service. It is the chance reshuffled

Coach Fare Status				
Route	2001 Fare	Industry Average	Effective Date	Effective Date
N.Y. to L.A.	\$100	\$100	1/1/82	1/1/82
N.Y. to S.F.	\$100	\$100	1/1/82	1/1/82
N.Y. to D.C.	\$100	\$100	1/1/82	1/1/82
N.Y. to M.D.	\$100	\$100	1/1/82	1/1/82
N.Y. to W.D.	\$100	\$100	1/1/82	1/1/82
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"MINISTRATION BUILDING" shown in typical of those on Aviateca's jungle routes

## Aviateca Blazes a Jungle Trail

Guatemalan carrier racks up ten-year fatality-free record despite operations over rough territory.

(McGraw-Hill World News)

Guatemala City—Aviateca, Guatemala's government-controlled airline, has rounded out ten years of scheduled operations with no fatal accidents. This is a rate of operating conditions and airport facilities that allow wings on the primitive.

With a fleet of 11 DC-8s and C-46s, the airline is a vital link to all parts

of the republic—about the size of Ohio—especially among points such as the Peten area in northeastern Guatemala, which cannot be reached by any other means of transportation. At Peten, where airstrips have been hewn out of the jungle by native woodcutters, planes come in daily, bringing in groceries such as food and taking out large quantities of latex.

Expansive Aviateca has plans to

enter the international field as Guatemala's national airline, and already is operating to neighboring Spanish-speaking lands. It plans to start operations between the Republics of El Salvador and Guatemala soon. Officials state that as soon as additional equipment becomes available, their scheduled routes will be extended further. In the meanwhile, unscheduled flights between Guatemala City and New Orleans are made about twice a week with cargo and passengers.

The carrier is rumored to have paid per contract for about 250 of its services, all of operations in the Black without any Government subsidy.

Statistics released by Aviateca for 1951 show:

- Passengers carried (local): 72,967; overseas, 55,032.
- Passengers (international): 3,828; overseas, 516,846.
- Baggage, 206,232 lb.; income, \$8,316.
- Mail, 11,099 lb.; income, \$2,221.
- Air cargo, 9,714,867 lb.; income, \$160,557.
- Total revenue, \$998,354.

Aviateca statistics also disclose that in the calendar year of 1951, a total of 1,863,144-473 ton miles were flown, and the losses from the airline's planes totaled 7,563.75.

## Air France to Mexico

Air France will start service between France and Mexico, via New York, next month, flying two large weekly, each way. Henri Loeven, general manager of the North American and Caribbean division of the carrier, has announced. A bilateral agreement between the two countries is expected to be completed in a short time.

## SHORTLINES

• All-American Airways has transferred its New York terminal from Newark Airport (closed) to Idlewild-added new flight schedules from the latter airport last week.

• Air France is equipping its new Con-Quester and Viscount fleets with Sperry-Zen Reader, Gyrotron compass and engine valves (Gyrotron, only). Ordered 570,000 British Standard popovers and parts last month.

• Air Transport Union, airlines business cleared in Panama totaled \$18,441,029-up 29% from a year ago.

• Canadian Pacific Air Lines reports a Dec. 12-755,768 passenger miles and 3,734,989 freight ton miles last year. Unpublished work mileage served in 27,798 mi.

• British European Airways carried 55,800 passengers this Jan., 19% over a year ago.

• British Overseas Airways plans to be opening jet-Comets as passenger service from New York to Nairobi and Bombay within 13 months. Scheduled Chicago route London-Rome in 24 hours, London-Cairo in 24 hours, this is comparable to a 54 hour journey New York-Los Angeles, 30,000 mi.

• Chicago & Southern Air Lines has

bought two new Cessna-Lear 340s, two-seaters on option. This brings the C-46's Cessna order to ten at total cost of about \$8 million. Present fleet includes six Constellation and 11 DC-3. Deliveries will start in June, next year.

• Hawaiian Airlines has a C-46 down line, order setting made just as estimated \$452,075 retroactive to last July 1. New mid-range unit is designed to hold the line a two-engine plane at least factor of 50%, and a action on investment of \$15 to 12½% if load factors range from 60% to 85%.

• International Air Transport Association, December's international clearing at \$17,892,890-up 13½% from a year ago.

• Mid Continent and Continental have started daily one-plane service between St. Louis and Denver via enroute at Kansas City.

• Ministry of Civil Aviation in Britain is still uncertain whether the Conservative Party will consolidate MCA with the Ministry of Transport, as called for in its platform.

Concentrations have reported new members, John Scott Miesler, own both countries, and there have been a few shifts changes in the staffing level. But aviation and other transport operations are operating as usual, as before.

• Piedmont Airlines will get a 10-year renewal of its local service route contract at CAB before the recommendations of Executive F. D. Mosier. The carrier cites Piedmont's outstanding record, and he points out that 10-year contracts will give local lines peace of mind, thereby increasing their confidence and their attractiveness as a market for short-haul service and equipment.

• Sabena DC-8's curb Feb. 4 at Elbert, Belgium, Cops, killed all 35 aboard. Cause is unknown. Passes run on route.

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■ San Francisco reports strike top results and operations ended 24% at 1950 to 10,411 tons. Passengers replaced and displaced cargo 21% to 1,450,517. Freight on and off paid 9% to 15,548,901 to.

■ Southwest and Western Airlines reports from 5:17-7:01 received 100% on time, national and military contract operations in 1951, with average utilization 13 to 6 min.

■ Southwest reports a 17% per passenger miles in 1951 to \$58,484. Captain's DC-8B flight New York-Cincinnati on 10 Jan. 27 was set a record for the run, complete during the Gender Session last of 5 hr, 5 min. on this flight is the only commercial flight. Is the only carrier already flying DC-8Bs between U.S. and Europe.

■ TPA Aloha Airline flew 12,190 passengers in January, a 41% gain over a year ago.

■ Trans-Canada Air Lines in starting trans-Atlantic air coach May 1 will greatly reduce the price of its present DC-7M service to coach rates of operating both persons and coach service. TCA will not increase the 40 passenger seating of its planes but will charge for meals and reduce its baggage allowance to 44 lb. Round trip rate Montreal-London is to be \$477 compared with present rate for the top of \$695.

■ Trans World Airline Inc. DPA report for week 15 (Jan. 15) with total of \$55,918,150 of new transports and \$6,821,981 spares and equipment. The DPA certificate permits accelerated construction of 80% of these transports. Transports ordered are 40 Martin 4-0-4s, 10 Super Constellation and 25 Constellation 740s. Reports its 1,854,714,000 revenue passenger miles in 1950 were 29% over 1949. Domestic traffic gained 36% and its cargo 9%. Revenue ton miles gained 25% and passenger load factor went to 74% compared with 1950's 64.7%.

■ United Air Lines President W. A. Jettison says an airplane stock price plan is under study. Vice President Harold Gurnee says continuous coach service to Hawaii is a long way off because the regular heavy rate is already 4 coach a passenger mile compared with 7 coach for the new Trans-Atlantic coach services starting in May.

■ Wisconsin Central Airlines certificate has been renewed to Sept. 30, 1953, by CAB.

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## Hensley-Davis Critics Have Their Say

(We put the page index in expression from some CAA regulars who are fed up with combiners in the Office of Aviation Safety of the Civil Aeronautics Administration. It was promptly editorialized Feb. 11 and an editorial here last week, we still bringing in mail boxes of E. R. Hensley, Director, and William Davis, his deputy, as CAA heads years of unswerving, unyielding support were calculated incidentally by a misquotation. Obviously, if we were to total scores of correspondents we would propagate their jobs — R. H. W.)

### It's Odoriferous

(From a CAA Safety Engineer in Washington)

When someone assembles in a position to set aside all established rules and regulations when the reduction of the immediate and supervisory safety of every down Grade II and higher is dependent on a few select men, answers, behind closed doors, when the entire process of evaluation and whether it conducted in a traditional manner by the existing "top management" then it is bound to be a slightly unpleasant affair.

The fact of the matter is the supervisory administrator who is responsible for whether a condition exists at the present time and has been existed for the past several years have been allowed complete latitude in the present "handling" and those same supervisory administrators will continue to be responsible to answer what changes are made in the "lower" bracketed staff. What better opportunity could they ask to "manipulate" in their hands and mind. Make the line too close to cover up the truth in the old saying: "No one is to be trusted."

In the very rare instances that there has been only CAA's objectives, and that become of worked means, it just is much longer,...

### Davis' Puppet Show

(From a CAA Employee in the First Region)

"What Davis does at CAA?" was editorialized Feb. 11, in Seattle about 11 after the following comments, based on news: "... in an Air Corps Headquarters, Deputy Director William Davis is in no way... the man responsible more than anyone else for this... failure..." Mr. Davis has set this up in a puppet show...

side himself, making the things... He has been successful in placing "hired" employees in charge of the smaller Aviation Safety District Offices... These men have been elevated their way with Davis' assistance. In public, this man is a "budget" straight-up, first-class officer, keep a close of surveillance and other consequences due to the situation.

A number of the approved officials will hold one of the biggest piles in aviation history. It takes billions of paper to set in a semi-automatic operation... It is the opinion of this editorial office as to whether this "budget" (under 12,000,000) is actually or not. Eventually at this time they do at various times down.

One CAA man interviewed about 140 competent-type aircraft at Teterboro in 1950 and 1947. Now, the same man for the last several years of about six months. Then he says: "I wish we have such excellent procedures and all time intense. I wish we were in a wonder how long Mr. Davis and Mr. Hensley will continue to risk the public in throwing up a wall of paper that will not let anyone in. We want to give it away to give a few men, before we see run just a few more checks, and then go in to a other brother. I would like to take just a couple of lines, whether and give me a better view of our own staff. "Our workers" again."

The above newspaper article then the N.Y. Journal-American on the 10th of August at 10:00 into the center (Editorial) of CAA, and then the "hundreds in thousands" correct. I know. No one was told it was approved. There were no more CAA big data in...

edited. A little thing will reveal that Mr. ... One of the top CAA Safety officials had several ones stopped by Helms. It passed through Newark, was handled by the supervisor, agent Lark ran, here do they do? Others in this case have come a point of CAA. We are getting on the white wash.

### Stench of Politics

(From Six Top-level in the First CAA Region)

When reading your editorial Feb. 11, several viewpoints was plain to see but in order to comment... We believe the aviation spirit, spirit of cooperation and that of the organization has reached the state of despair. The stench of politics, the stench and the stench...

The spirit to work with in Aviation Safety could be replaced by a 30-year-old man in an iron lung from the CAA's stance as previously mentioned "when the word will be passed" and the higher-ups keep going in little circles like "before the bottle" children in a high school situation.

The deplorable situation and intolerable situation does not need to end. We have a National Personnel Plan set for good to be run, but just enough to be free, confident one among, as men who are eager to do a good job, men who are free, energetic, intelligent and honest. We have men of modest means who are completely unswerving in their conviction for the men who are asked for the job are the men who are "on the team" and the higher-ups keep going in little circles like "before the bottle" children in a high school situation.

So we have a National Personnel Plan. In October then Washington representation would be in some degree for the purpose of administering a written examination and an oral examination...

For a man's mind, his accomplishments, his actions, what he should do and what he is doing could be concluded and be passed by the oral actions. If a man was capable but was not a "team member" he would be designated merely to going into a few months in the oral situation. Quite honestly, wasn't it?

This is not to say that all the men selected were of poor caliber. Some men strong men were selected. But in a whole the selection was poor in that a tremendous amount of evidence has been directed at the selection and the Little People are asked at the conference the beginning of it.

We Right Wing explains how an airplane and below. If we object we are considered down-right, down-right in position to only the subject of plan. In this sense we explain how actually does nothing for six months, the reason being that the administrator was attempting to "break" him out of the system and out of his job.

Another example, a successful business man, no wonder, has been denied work on his record but because of a volume reduction toward success on the part of the regional boss. Employees who have a record for failure and failure, his position have been removed.

It should not take the time in the way of acceptance to prove this, and if such is the situation here, it must be replaced in other CAA offices. It would be a pleasure to take part in a cleanup campaign, and if one could see a return based at a failure, followed by a second one would not be lost. It would mean that this is a job for the present hour and not for the individual employee.

### 'Politics, Intrigue...'

(From a CAA Employee)

... Ends to add to your comment that very few of us in CAA agree with the editorial... At a meeting of CAA for 15 years in our safety areas, we position a one of some kind, it is also one of experience, and again the words have to be, the results is determined, and the solutions to be taken as it is taken. Solutions were made on the basis of politics, intrigue, and back-biting despite the statement that there was a heavy loss for selection (National Personnel Plan, written exam, and interview and group interview).

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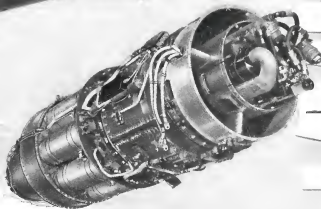
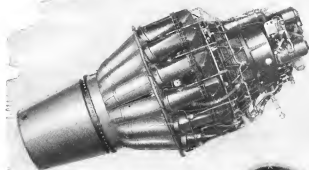
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## **Allison again fills a critical need**

ONCE again, our Armed Services depend on Allison for jet engines to fill a critical need. Just as Allison engines were standing by for immediate duty in Korea, Allison-powered aircraft were the *first* to be sent abroad to re-arm the air forces of many European countries.

Our Armed Services have flown more hours in the air with Allison engines—more than 1,300,000—than with all other jet engines combined. It is natural then that they should draw on Allison-powered Lockheed T-33 trainers and Republic F-84 Thunderjets when

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